CASE STUDY
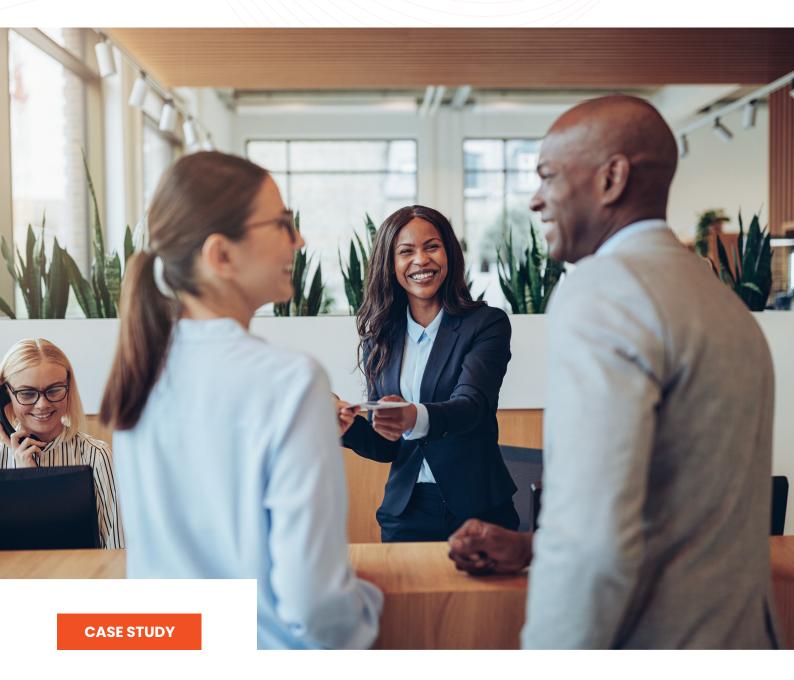
Transforming the Future of Hospitality

Leveraging Data & AI to Identify Traveler
Behavior Patterns and Modernize Experiences
for a Leading Hotel Chain Worldwide

The changing face of travel

The hospitality industry suffered huge economic losses due to COVID-19 travel restrictions, not only stifling leisure travel bookings but also forcing the cancellation of crucial business trade shows and conferences that had long been the lifeblood of large hotels.

Emerging from the pandemic, a major global hotel chain wanted to better understand the shifting nature of travel, with personal vacations taking precedence over work-related trips. The question was how to best serve this population and earn their loyalty while managing ongoing changes in an uncertain world.

To gain data-driven insights into the client's vast range of assets and stakeholders—from hotels and restaurants to franchised and licensed properties as well as resorts and short-term rentals under several brand names—extensive modernization of legacy information systems was required.

Proactively identifying trends and bringing data together across the enterprise, Tredence was instrumental in this transformation effort, identifying new ways for the chain to use the data they had to build more resilient AI/ML models and prepare for the next wave of travel.

Our enterprise-wide approach

In a multi-year engagement, Tredence connected strategically with the client across multiple teams such as customer analytics, revenue management, data and reporting, and IT to develop a holistic solution and a solid foundation for technology and data and AI/ML models for customer loyalty and point redemption while closing existing technology gaps.

Tredence also focused on key customer experience and self-service analytics to drive the organization forward. The ultimate goal was to maximize the hotel chain's revenue with the agility to rapidly assess changing travel needs and easily adapt by making the best possible data-driven decisions.

1 | Trendsetting leadership across the industry

With multiple different teams creating their own reports, a proliferation of dashboards and lack of cross-functional visibility meant that every department defined its own key performance indicators (KPIs), used different data sources, and generated isolated reports.

The result was no knowledge sharing or interdepartmental learning, and 30–40% wasted business analyst time investigating and explaining report discrepancies.

It typically took weeks to share insights with leadership and the company was stymied by a mismatch in KPIs across reports, leading to a loss of trust in the data and sluggish decision-making.

Tredence disrupted the current state by introducing a modern BI platform, which was custom-designed to handle 50,000+ users with very different skill levels and interests (from hotel owners to brand marketers and loyalty program leaders).

The Tredence way

- Careful study of current processes

- Evaluation of technology and technology partners to ensure success

- A creative solution that caters to each user persona

- An intuitive platform to support user adoption of new systems

The new systems also accommodate competitors, such as hotel owners from the same region, as well as external entities who are now shielded from sensitive information via access assignments, fine-grained access-based control, and security permissions.

Self-service BI and data analytics

Approach:

1	ASSESSMENT AND EVALUATION
2	DATA HARMONIZATION AND REPORT RATIONALIZATION
3	SEMANTIC LAYER, DATA STORE, AND BI PORTAL

Problems encountered:

Disparate data sources and multiple reporting systems and tools that led to inconsistent, redundant, and fragmented reports; metric misalignments in reports; minimal risk alerts and communication; and limited ability to search and run deep-dive analyses.

Solutions:

Revamped entire corporate reporting architecture with a focus on easy search and review, enhanced collaboration across the organization, and persona-based user experience.

Outcomes and impact:

Improved data consistency and accuracy, data discoverability and understandability, flexibility and ease of use, scaling for future readiness, and integration with existing technology. Created a single source of truth with centralized data curation and translation—enabling direct access for business users and a one-stop shop for all reporting needs. Provided a centralized BI portal with persona-based dashboards to easily run relevant reports and retrieve documents across teams. Standardized data governance for greater visibility of data lineage, usage, access, and distribution with built-in alerting and communication capabilities.

The results:

50% reduction
in time to create new reports

80% easier
to search and consume reports

Easier collaboration
for new/existing data models with proper data governance

Persona-based user experience
with enhanced alerts and communication

2 | Improving demand forecasting with AI/ML

Coming out of the pandemic, market turbulence continues worldwide as fears of recession, interest-rate hikes, and more influence consumer spending. For hotels, in particular, year-over-year historical data are no longer an accurate indicator since travel trends have evolved significantly and post-Covid recovery is unpredictable.

With an inability to accurately forecast demand going forward, the client needed innovative methods to quickly respond to fluctuating demand and ever-changing market conditions. Clearly, a more advanced forecasting framework was necessary for the business stakeholders to responsibly plan and manage revenue.

The state-of-the-art Tredence solution was to augment in-house, historical data with external signals and build an AI/ML framework to add flexibility based on changing conditions, using AI and ML to help hedge against.

The Tredence way

Sophisticated algorithms—to break down seasonality factors, business vs. leisure traveler behavior, and COVID recovery trends

Flexible framework—for greater user control to manage inventory, forecasts, and cancellations

Big picture approach beyond just room nights—from identifying new lines of business, to partnerships, to total revenue

The focus of the effort was on regrowth of market share in the short and long term through better demand prediction and inventory optimization. Demand, pricing, and inventory models were specifically built to help the hotel chain survive and thrive.

Revenue management

Approach:

1	GROWTH ENABLEMENT
2	ROBUST FORECASTING FRAMEWORK
3	GROUP CANCELLATION STRATEGY

Problems encountered:

Inaccurate forecasts due to inadequate demand and price forecasting models; diverse trajectories for recovery based on brand, geography, and vaccination rates reported in seasonality and trends across different properties; and poor prediction performances and skewed hyperparameters of forecasting models due to heavy reliance on a "same time last year" model for most hotel properties.

Solutions:

Designed a dynamic and flexible forecasting framework; provided the capability to choose between a series of predictive models based on property-specific recovery patterns and hyperparameters; enabled operations scientists to modify/update model recommendations and rerun forecasting models to eliminate potential errors; and provided revenue managers higher visibility into demand seasonality and trends across the whole portfolio of hotels.

Outcomes and impact:

Increased data transparency for revenue managers and property managers, providing a better view of room pool availability, as well as higher control to regulate on-hand inventory for transient bookings. Delivered a clear understanding of expected revenue for goal setting and the ability to exercise capacity planning.

The results:

75% reduction
in forecasting error-related issues

15% gain
in accuracy of average daily rate forecasts

10% reduction
in revenue attrition due to group cancellations

30% reduction
in retraining time required, reducing infrastructure costs and faster insight

1.5X reduction
in time to add new property and generate forecasts

25% reduction
in error rates related to optimal inventory availability recommendations

3 │ Personalizing loyalty member benefits

Customer loyalty programs are critical for hospitality chains to maintain industry leadership—loyalty is a key differentiator that can provide a competitive advantage while driving both market share and revenue growth.

The client's loyalty program wanted to track its effectiveness, drive an increase in member loyalty, and provide more value to the customer. Due to a merger with another major player, the chain also wanted to increase the loyalty program's overall value.

As a leader in loyalty analytics, Tredence's approach is backed by a proven, comprehensive framework with all the features needed to fulfill the client's objectives. Our system not only enables the observation of travel behavior trends but also generates recommendations for how to encourage the right behaviors, thanks to AI/ML techniques.

The Tredence way

- Proprietary framework—segment customers based on expected value and catered to each department's use cases

- Focus on key driver of customers' behaviors and produce prescriptive insights

- A holistic solution for all the pillars of loyalty—member and program analytics, marketing, operations and point economics, partnerships and parallel value streams

Customer loyalty program

Approach:

1	MEMBER AND PROGRAM ANALYTICS
2	LOYALTY MARKETING
3	GROUP CANCELLATION STRATEGY
4	PARTNERSHIPS AND PARALLEL REVENUE STREAMS

Problems encountered:

Maintaining customer loyalty when they aren't traveling; no callout of high-value or at-risk customers.

Solutions:

More realistic customer segmentation based on historic purchases, credit score, purchasing trends, digital engagement, tenure, consistency, and customer satisfaction. Loyalty member benefits designed, deployed, monitored, and evaluated via AI-driven analytics. Survey feedback data to identify customer health drivers influencing purchase.

Customer lifetime value viewed in the context of a value-based strategy, involving enrollment campaigns, point benefits for members, and a reward program through partnerships like cobranded credit cards, and food and beverages. Hyper-personalized campaigns for high-value customers, leveraging algorithmic target marketing and applying global versus segmented promotion parameters for different hierarchical audiences. Measuring customer health, program operations and economics, and partnership value.

Outcomes and impact:

A paradigm shift from demographic segmentation to a behavioral segmentation model with individualized, tailor-made campaigns. Transformed enrollment goal-setting from a heuristic to an algorithmic process through point analytics, with a standardized framework for point evaluation.

Provided a single source of truth for all customer data via the Customer 360 approach. Delivered a one-stop shop for accessing customer health information, including potential at-risk customers. Built a buy-till-you-die model that flags high-value/high-potential customers.

The results:

$110
average increase in lifetime value

3% increase
in average customer room nights against control group

8% increase
in customer retention

6%
improvement in registration rates for targeted promotion

2X
return on investment for ATM

50% lower
time to design, deploy, and get insights through analytic products

2%
average incremental share of wallet (measured via credit card data)

$1,500+
average incremental share of wallet (measured via credit card data)

+6%
incremental for cost per 1,000 points

115%
average goal attainment for property enrollment success rate

2.5M+
net members added annually from properties

1,500
lifetime users for PESR solution built on cloud data warehouse

4 │ Unlocking distinctive insights from the voice of customer to identify emerging themes

According to Gartner, 81% of businesses compete primarily on customer experience: "A strong customer experience strategy is necessary for improving the end-to-end journey for customers. A positive customer experience can help improve customer retention and loyalty. It can also help convert customers into loyal brand advocates, eventually increasing your customer lifetime value." [1]

[1] Gartner, "Customer Experience (CX) Strategy," 2022.

The hotel chain wanted to ensure a high-value, curated experience in sync with the hospitality industry trends. Tredence offered innovative technology to gain insights at a scale not possible before, by actively listening to the voice of the customer (VoC) via multiple channels throughout their journey.

This enables the client to draw insights from customer calls, texts, and surveys, and then tie them back to systemic operational issues or one-off issues that a customer has faced.

Signals can be observed through an array of captured data elements across transactional, behavioral, and operational systems. For example, if a customer spends more than a few seconds on the website's payment confirmation page and then clicks through to the support page, this behavior signals there might be a brewing problem. Data from site analytics help catch potential problems early, so they can be preempted before they morph into bigger issues that affect customer perception.

The Tredence way

AI/ML technology to synthesize and pick out the most valuable information

Extrapolation of observations to all customers

A prioritized VoC roadmap with functional teams to resolve friction

Focus on measuring magnitude of feedback impact rather than volume of feedback

Customer experience

Approach:

1	VOC ROADMAP
2	KEY GAPS
3	CUSTOMER FEEDBACK

Problems encountered:

Receiving ~150,000 emails and ~65,000 calls per day on various issues. Missed opportunities to capture new trends fast enough due to time- and labor-intensive analysis of unstructured data. Too much time spent on resolving complicated customer cases. Unnecessary lost revenue and churning to competitors.

Solutions:

Found key gaps in the existing CX and resolved them via proprietary algorithms. Created a VoC roadmap to drive the improvement process, innovating across the business and service model to provide greater value. Monitored customer journeys, identified problematic touch points, considered survey data along with text and voice analytics, and employed sentiment analysis to determine causes of customer grievances through negative feedback identification.

Outcomes and impact:

The VoC feedback (gathered from customer service calls, emails, chats, social media, etc.) effective in pinpointing inflection points. Modeling of CX topics to help the client identify the most pressing concerns through themes, subthemes, and actionable insights. Call intents successfully categorized (by loyalty level, individual characteristics, recent stay, etc.), patterns recognized for faster resolution, and at-risk customers flagged to avoid churn.

The results:

- **+5–10%** in incremental margin driven by proactive and seamless customer experience

- **8% decrease** in incoming call volume

- **2 pt** increase in average net promoter score (NPS)

- **76% fewer** negative comments in owned media

- **$13M** direct revenue recovered in a 3-month period

Conclusion

Tredence Travel and Hospitality:

The comprehensive project delivered an integrated set of technology solutions that benefited all the hotel chain properties. It helped them turn around a business cycle that had been devastated by a global pandemic. With the assistance of powerful data analytics and AI/ML algorithms, the client can now assess the modern-day traveler and make their journey one to remember, time after time. It's a win-win, as bookings and revenue continue to recover.

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