**Hospitality case study**

**Identifying traveler behavior patterns via modern data analytics**

to help accelerate the world’s largest hotel chain in its economic recovery post-pandemic

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# The changing face of travel

The hospitality industry as a whole suffered economically due to COVID-19 travel restrictions. The pandemic not only stifled leisure travel bookings but also forced the cancellation of crucial business trade shows and conferences, traditionally the lifeblood of large hotels.

A major, global hotel chain sought to better understand the emerging travel trends and gain an economic advantage. With personal vacations taking precedence over work-related trips, the question was how to best serve this population and earn their loyalty in an uncertain world.

Extensive modernization of legacy systems was key to gaining data-driven insights into a vast range of hotel assets and stakeholders—from wholly-owned properties to franchised and licensed properties, to timeshares, and so on.

Tredence was instrumental in leading an enterprise-wide, digital transformation effort with a focus on improving both business intelligence and the customer experience. An integrated platform has made it possible to run end-to-end, AI-driven analytics tracking how travelers behave across the full extent of locations and brands.

# An enterprise-wide approach

In a multi-year engagement, Tredence thoroughly assessed the hotel chain’s data challenges, department by department—including Self-service Business Intelligence (BI) and Data Analytics, Revenue Management, Customer Loyalty Program, and Customer Experience. Technology gaps were closed by implementing state-of-the-art systems where needed. The main goal was to rapidly assess changing travel needs and easily adapt by making the best possible, data-driven decisions. Agility was key to maximizing the hotel chain’s revenue during the immediate period of recovery and beyond.

# Catching the latest analytics trends in the industry

Today’s data scientists think holistically, while also providing self-service analytics for each user persona. This requires the right technology, processes, and change management.

***Highlights***

*Careful study of current processes*

*Evaluation of technology to ensure success*

*A creative solution that caters to each user persona*

*An intuitive platform to support user adoption of new systems*

Previously, the hotel chain lacked cross-functional visibility, with every department having its own key performance indicators (KPIs), different data sources, and isolated reports. This resulted in information silos that impacted knowledge sharing and interdepartmental learning, while up to 40% of business analyst time went to investigating and explaining report discrepancies. Prolonged time to insights slowed decision-making, further impacted by potentially inaccurate or incomplete data, as well as human error.

Tredence disrupted the status quo by introducing an enterprise BI platform with accelerated data processing and standardized reporting. Personas were created to handle 50,000+ users with very different skill levels and interests (e.g. hotel owners, brand marketers, and loyalty program leaders). Data protection was enhanced with the ability to assign access and grant security permissions, shielding external entities from sensitive information. Importantly, the user-friendly interface of the BI portal helped smooth the transition.

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| **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 |

## **Self-service BI and Data Analytics**

**GOALS:** 1) assessment and evaluation, 2) data harmonization and report rationalization, and 3) semantic layer, data store, and BI portal.

**CHALLENGES:** 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 tools; and limited ability to search and run deep-dive analyses.

**SOLUTIONS:** Revamped the corporate reporting architecture, standardized and consolidated reports, identified KPI duplication, and prioritized business-critical reports by franchise. Conducted a user pilot for proof of technology before making tools available to the wider organization.

**RESULTS:** Improved data consistency and accuracy, enterprise-level search capabilities, flexibility, and ease of use, while integrating with existing technology and scaling for future readiness. 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 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.

# Improving demand forecasting with AI/ML

Post- pandemic, market turbulence continues worldwide. With fears of recession, interest-rate hikes, etc., influencing consumers across all industries, it is difficult to predict the future based on the past. For hotels, in particular, year-over-year historical data are no longer an accurate indicator. There was virtually no travel during COVID-19 and recovery is unpredictable.

Unable to project seasonal revenue going forward, the hotel chain needed innovative methods to quickly respond to fluctuating demand and ever-changing market conditions. A more advanced forecasting framework was necessary to responsibly plan and manage revenue.

To help hedge against uncertainty, Tredence supplemented in-house, historical data with external signals using artificial intelligence (AI) and machine learning (ML). The regrowth of market share in the short and long term via money-saving strategies and improved forecasting capabilities was of primary concern throughout the project. The creation of demand, pricing, and inventory models is especially helping the hotel chain survive and thrive.

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| **75% reduction** in forecasting error-related issues |
| **30% reduction** in retraining time required, reducing infrastructure costs and faster insight |
| **15% gain**in accuracy of average daily rate forecasts |
| **1.5X reduction** in time to add new property and generate forecasts |
| **10% reduction** in revenue attrition due to group cancellations |
| **25% reduction** in error rates related to optimal inventory availability recommendations |

## Revenue Management

**GOALS:** 1) growth enablement, 2) robust forecasting framework, and 3) group cancellation strategy.

**CHALLENGES:** 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 of performance and skewed parameters of forecasting models due to heavy reliance on a “same time last year” model for most hotel properties.

**SOLUTIONS:** Designed a dynamic, flexible forecasting framework; provided the capability to choose between a series of predictive models, based on property-specific recovery patterns and parameters; 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 portfolio of hotels.

**RESULTS:** Increased data transparency forrevenue 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 enabled capacity planning.

***Highlights***

*Differentiation of seasonality factors, business vs leisure traveler behavior, and COVID recovery trends*

*Greater user control and flexibility to manage inventory, forecasts, and cancellations*

*Big picture looking beyond just room nights to new lines of business, partnerships, and total revenue*

Personalizing loyalty member benefits

One-size-fits-all solutions are obsolete in the new reality. To build loyalty, the hotel chain needed to personalize customer journeys with more meaningful offers. For example, a last-minute discount coupon is more effective to travelers looking for a weekend getaway than to a couple desiring a once-in-a-lifetime honeymoon trip.

***HIGHLIGHTS***

*Customers segmentation based on expected value and catering to specific use cases*

*Focus on key drivers of loyal customer behavior and prescriptive insights*

*A holistic solution for member and program analytics, marketing, operations, point economics, partnerships, and parallel value streams*

The Loyalty Program department wanted to track effectiveness, increase member loyalty, and deliver better value to various customer segments. Due to a recent hotel merger with another major player, it was also time to update enrollment success criteria for all hotels’ performance and incentives.

Drawing upon experience in loyalty analytics, Tredence facilitated the observation of travel behavior characteristic with respect to members. Why do people buy a trip, why don’t they buy a trip? The intelligent system also makes recommendation to encourage loyal behaviors, thanks to advanced AI/ML training.

## Customer Loyalty Program

**GOALS:** 1) member and program analytics, 2) loyalty marketing, 3) program operations, and 4) partnerships and parallel revenue streams.

**CHALLENGES:** Old forecasting methods outdated;previous buyer persona not mirroring actual customer behavior; demographic segmentation no longer applicable, as homogeneity cannot be assumed and does not accurately reflect potential churn or change in purchase patterns. Also, no specific callouts of high-value, at-risk customers.

**SOLUTIONS:** More realistic customer segments 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 affecting purchase decisions. Customer lifetime value viewed in the context of enrollment campaigns, point benefits for members, and a reward program through partnerships (cobranded credit cards, food and beverages, etc.). Hyper-personalized campaigns for high-value customers, leveraging algorithmic target marketing and applying global vs segmented promotion parameters for different hierarchical audiences.

**RESULTS:** A paradigm shift from demographic segmentation to a behavioral model with individualized, tailor-made campaigns. Transformed enrollment goal setting from a heuristic to an algorithmic process via point analytics, with a standardized framework for point evaluation. Provided a single “source of truth” for all customer data using a 360-degree 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.

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| **$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 |

# Listening to the voice of customer (VoC)

Customer experience (CX) is the single most important competitive advantage for any company today. It is, therefore, a business imperative to monitor, optimize, and constantly enhance customer perception at every touch point.

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 customer lifetime value.”[[1]](#footnote-1)

The hotel chain wanted to ensure a high-value, curated experience for its customers, in sync with current hospitality industry CX trends. Tredence technology solutions enable insights at a scale not possible before, by actively listening to the VoC via multiple channels — customer calls, texts, and surveys. Hotel website analytics also proactively signal potential issues for quick resolution, before affecting customer perception. 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, a problem might be brewing.

***HIGHLIGHTS***

*Synthesis and extraction of the most valuable information*

*Extrapolation of observations to all customers*

*A prioritized VoC roadmap with functional teams to resolve friction*

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

## Customer Experience

**GOALS:** 1) VoC roadmap, 2) key gaps, and 3) customer feedback.

**CHALLENGES:** 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.

**RESULTS:** VoC feedback (gathered from customer service calls, emails, chats, and social media) effective in pinpointing inflection points. Modeling of CX topics helping the client identify 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.

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| **+5–10%** in incremental margin driven by proactive and seamless customer experience |
| **8% decrease**in incoming call volume |
| **76% fewer** negative comments in owned media |
| **2 point** increase in average net promoter score (NPS) |
| **$13M** direct revenue recovered in a 3-month period |

# Conclusion

The hotel chain is on the path to recovery. After a devasting business cycle caused by a natural disaster, the numbers indicate growth for every department. The extremely thorough data modernization project broke down old silos and delivered an integrated set of technology solutions, simplifying and unifying access to all hotel property information. With the assistance of powerful data analytics and AI/ML algorithms, in-depth understanding of the modern-day traveler helps make each journey one to remember. It’s a win-win, as bookings and revenue continue to recover.

Want to know more about us? Please visit <https://www.tredence.com/industries/travel-hospitality>.

1. Gartner, “[Customer Experience (CX) Strategy](https://www.gartner.com/en/marketing/insights/customer-experience-strategy),” 2022. [↑](#footnote-ref-1)