TATA CONSULTANCY SERVICES

Building on belief

Customer Journey Orchestration with AI-Powered Unified Customer Profiles

Introduction

Despite expanding budgets on acquiring leads and investments in personalization capabilities, retailers are struggling to drive customer lifetime value (CLV). The answer lies in customer profiles that are captured and forgotten like a wish put in a bottle and thrown in the sea. These profiles fail to evolve in real time as retailers struggle to effectively capture every customer engagement across omnichannel journeys.

Today, personalization has evolved into omnichannel journey orchestration; it is a fine balancing act between serving the just-in-time intent of shoppers and their long-term preferences to deliver highly contextual and individualized recommendations at the right touchpoint.[1] However, with limited data across siloed touchpoints, large dependency on historic customer behavior, and the inability to decipher current context, existing personalization solutions fail to deliver.

This white paper prescribes a framework for driving CLV with journey orchestration using AI-powered unified customer profiles.

Real-Time Personalization Requires Customer Profiles in Real Time

Journey orchestration for both known and unknown shoppers requires retailers to gather and analyze both internal and external unstructured data on every shoppers' buying behavior and needs in real time to predict future behavior. Conventional approaches are incapable of capturing customer data from all systems and channels, cleansing, matching, merging, and enriching customer profiles in real time. They are hard to build, maintain, and scale. This has forced retailers to turn to AI-enabled platforms for building unified profiles.

Apart from leveraging both static and derived customer data to build unified profiles, AI-enabled platforms also automatically update the profiles in real time as new data becomes available. For example, an AI-powered personalization solution can gauge that people who purchased seasonal decorations in winter are more likely to respond to specific holiday promotions and less likely to respond to general discounts and can tailor recommendations accordingly. It can also reveal the differences across demographics and suggest new ways to personalize across micro segments.

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[1] Read our paper "Personalization 2.0: Real-time, Contextual, and Intent-Driven" on how to enhance consumer engagement through AI-driven personalization. https://www.tcs.com/ai-driven-personalization-strategies

Framework for Building Real-Time, Unified Customer Profiles

Establishing a solid data foundation for building a holistic customer profile begins with identifying the internal and external data sources that can provide insights into the past and present behavior of shoppers. This data needs to be engineered and aggregated to build the customer profile (see Figure 1).

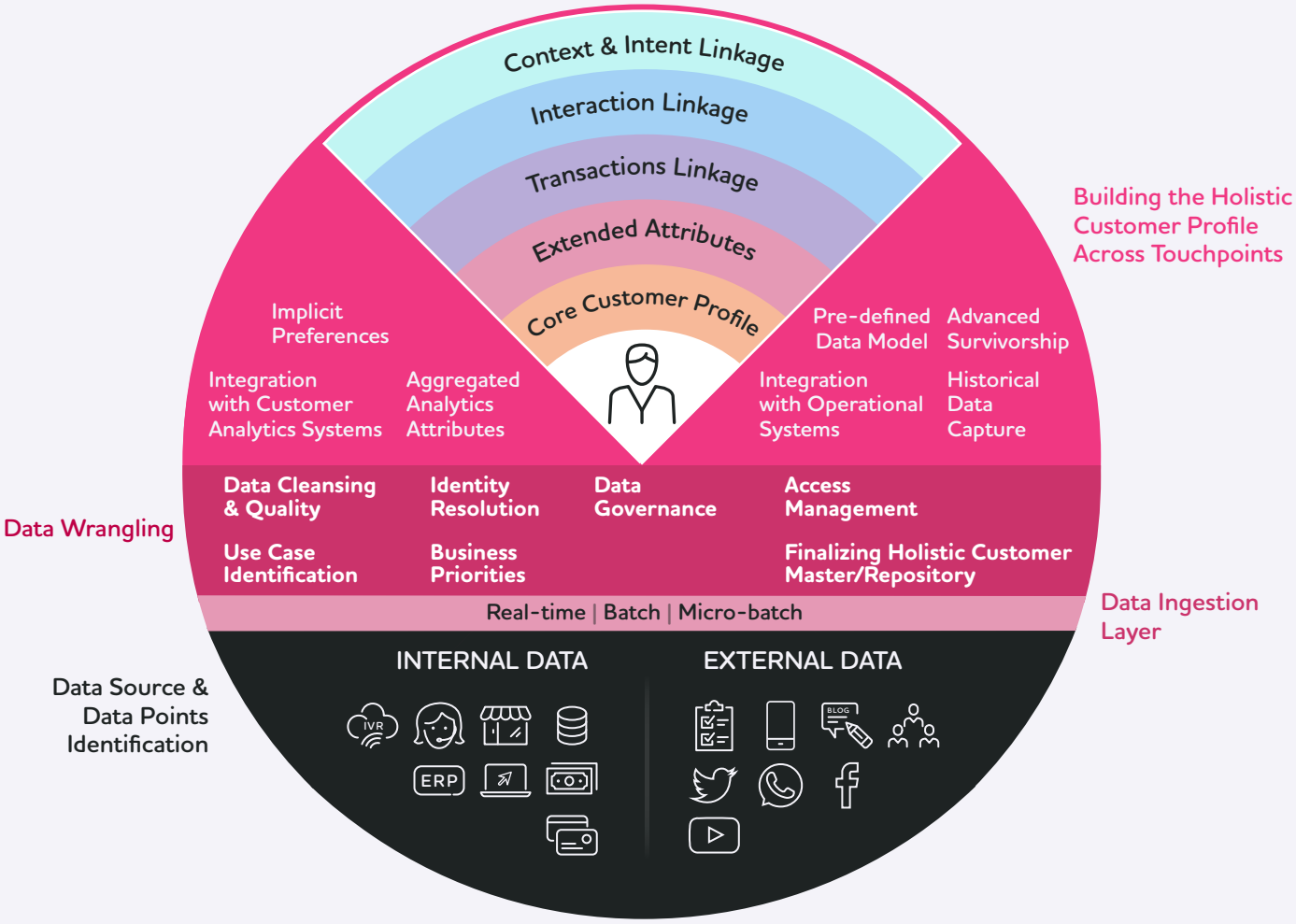

Figure 1: Framework for building unified customer profiles

Retailers can use the customer profile to predict the future intent and interactions of shoppers by:

- Deriving behavioral traits and implicit preferences based on attributes extracted from the static data such as market basket analysis, brand affinity, item affinity, and lifetime value.
- Segmenting customers to identify identical twins or closest scored customers based on attributes such as brand affinity and propensity to buy.

  Note: It is unlikely that all customers will showcase all behavior traits. In such cases, segmentation helps in logically grouping customers based on related behavior traits.

- Conducting descriptive and statistical analysis. For example, identifying high value customers, new customers, and least engaged shoppers with RFM analysis—recency (days since last purchase), frequency (number of orders placed within a period), and monetary (money spent within a specified period).

- Integrating the data with third-party data providers, and feature engineering[2] to convert raw data into input for predictive modeling.

To drive synchronized, consistent experiences across touchpoints, the engineered and aggregated data needs to be continuously updated and ingested into the customer profiles. The data ingestion layer is the backbone of an analytics architecture. It categorizes incoming data, routes it to the best storage location, and makes it available to the consuming programs such as campaign management and personalization. The objective is to ensure that the data is available within the permissible latency of an hour or four hours or a day for amplification at the customer level or household level as governed by the corresponding use cases.

The next step towards building a holistic customer profile is ensuring the availability of good quality data. The ingested data needs to be validated, cleansed, and processed into the desired format for resolving the customers' identity through data wrangling and orchestration (see Figure 2).

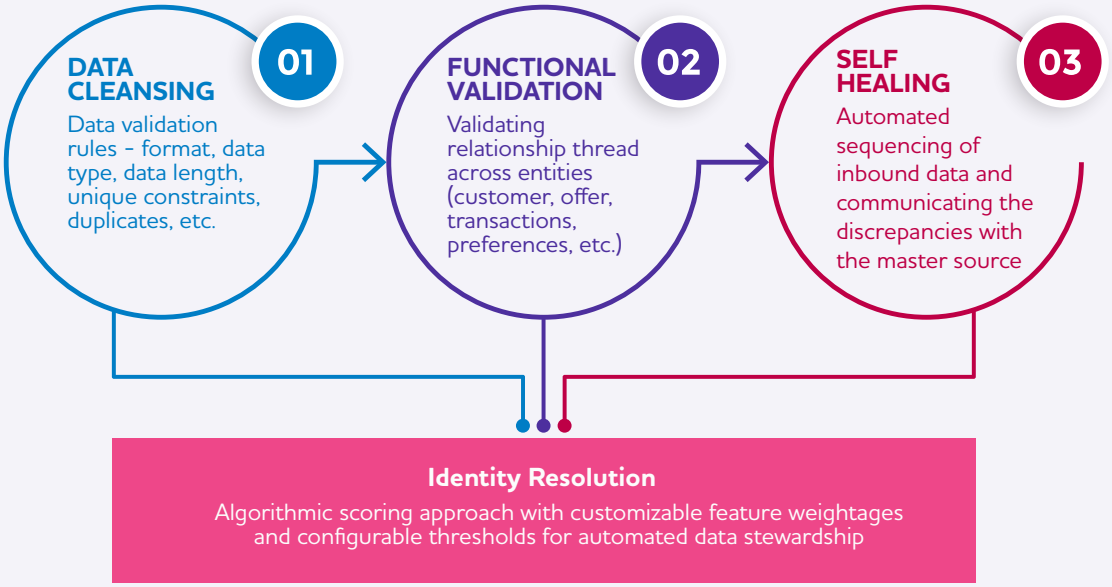

Figure 2: Data wrangling and orchestration

The identity resolution module helps identify customers uniquely in real time through advanced survivorship by deduplicating overlapping customer attributes/data with advanced AI techniques. The complete picture of the customer is pieced together by linking identities from multiple channels and determining which data will be used to build the profile in the case of data conflict.

AI and machine learning can process complex data quickly and abstract the right information, disregarding invalid data. Based on their data maturity, retailers can adopt different approaches to data abstraction. While retailers with limited data maturity can use algorithms that generate results with a lower breadth of data, retailers on the path to higher maturity levels can use meta models. The meta models enable autonomous extraction of petabytes of data from

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[2] Read our paper "Feature Engineering Key to Maximizing Business Outcomes with Predictive AI" on how to maximize outcomes from AI implementations with feature engineering. https://www.tcs.com/feature-engineering-data-preprocessing

disparate sources including real-time feeds creating a layer of abstraction, enabling easy integration with other data components and re-usability across industries. Retailers with a high maturity level can create a semantic layer (enterprise-wide common definition of KPIs and metrics; for example, sales value excludes associated value-added tax (VAT) and campaign cost in all computations) that scales with the inclusion of additional derived attributes.

Intelligent Journey Orchestration with Unified Profiles

Orchestrating a personalized experience driven by context requires a unified profile that gives a comprehensive view of shoppers with both static and derived attributes. This profile can be built using a layered approach (see Figure 3).

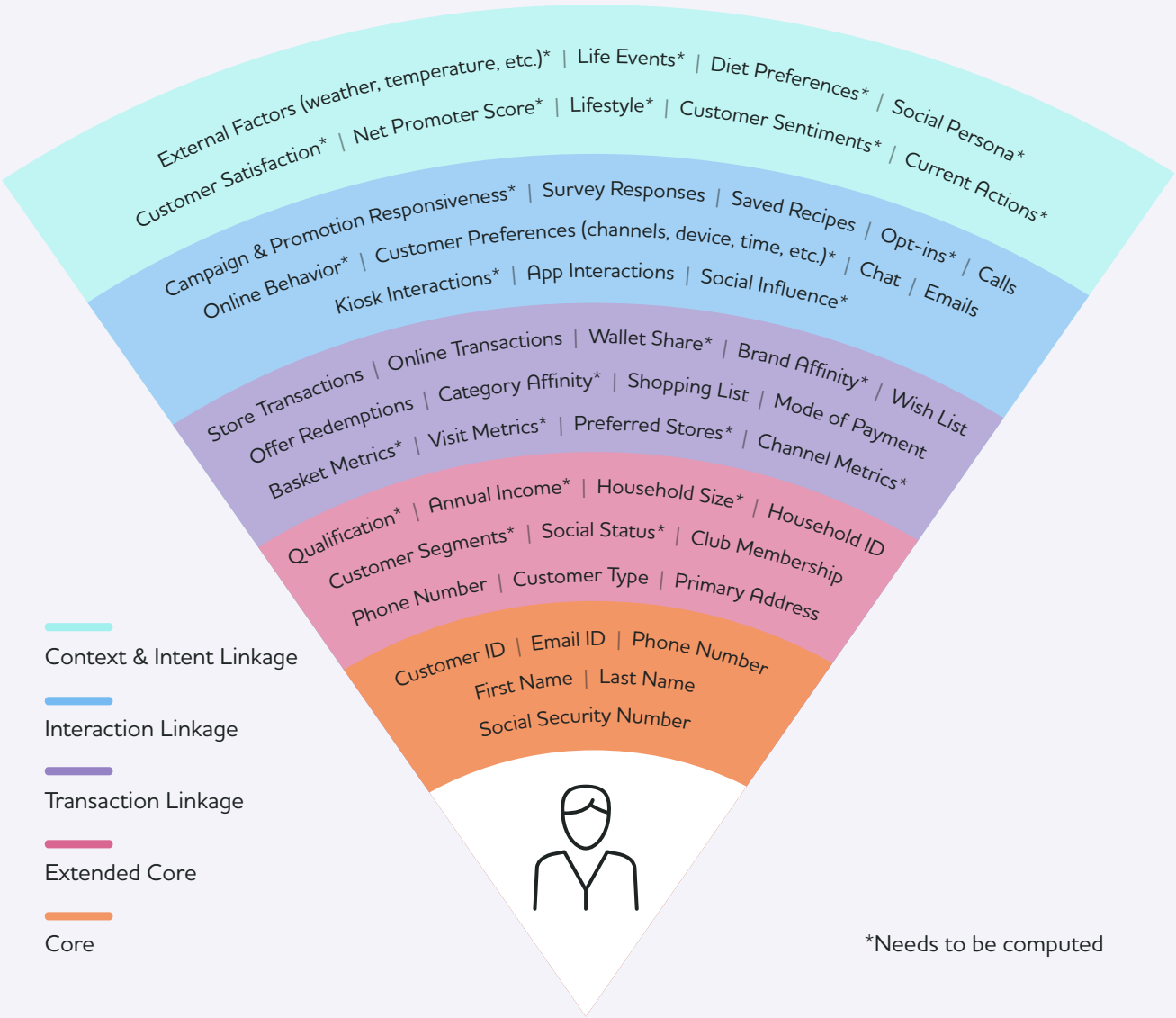

Figure 3: Unified customer profile with sample static and derived attributes

The Core and Extended Core layers contain the primary and secondary information used to identify a customer. The Transaction Linkage layer details all monetary engagements of the shopper such as the wish lists, online and store transactions, and offer redemptions. The intelligence needed for capturing customer intent can be added to this layer by deriving attributes such as visit and basket metrics, and brand affinity. These derived attributes help unearth implicit preferences and behavioral traits that serve as the foundation for creating a personalized path-to-purchase for each customer.

The next two layers—Interaction Linkage, and Context and Intent Linkage—consolidate data from omnichannel customer interactions to create holistic customer profiles, beyond historic patterns and buying behavior. Domain-specific, customizable predictive analytics models can be configured and run on this data to arrive at a customer score, for example, the propensity to buy a product. As more customer data becomes available, the profile gets enriched with many more derived attributes such as the propensity to buy, meal preferences, share of wallet, and social influence.

As the customer starts interacting across different channels and touchpoints, more and more data points are created across the layers and they are orchestrated sequentially inside out (Core Profile to Context and Intent Linkage) creating a holistic customer profile detailing the who (customer), what (preferences, affinity, KPIs, model scores), why (context of visit, type of trip, product), when (day, time, seasonality), and where (store, channel).

With AI-powered unified profiles, retailers can provide real-time, contextual, and intent-driven experiences with better visibility into the omnichannel journey of every customer, driving higher CLV.

Prioritize Data Governance

Setting up customer preference centers (CPCs) to get customer consent and know their preferences is a crucial aspect for personalization initiatives and adherence to the General Data Protection Regulation (GDPR). An information owner should oversee customer consent, access, information lifecycle management, documentation, and revisiting the scope and purpose of customer data over time. Through CPCs, retailers can track which products interest customers, which messages they want to receive, how often they want to receive them, and through which channels:

- **Communication preferences (explicit and implicit):**
  - Types of communication: Newsletters, product launches, features in stores, touchpoints, inspirations, health and wellness
  - Timing of communications: Time of the day, day of the week
- **Content types:** Text, audio, video
- **Channel preferences:** Email, physical mail, SMS, push notifications
- **Level of personalization:** Wisdom of crowd, segmented targeting, personalized (1:1), data-led offer allocation
- **Right to view and extract data:** Enabling customers to view all information being captured about them, and the flexibility to request for a data extract
- **Customer agreement:** Latest customer consent agreement with all provisions as applicable

Conclusion

Effective journey orchestration with unified customer profiles that track user data in real time as they engage with various touchpoints can have a profound impact on customer satisfaction, and dramatically reduce churn and increase conversion. In this digital age, a customer's profile can never be complete since new behavior traits keep emerging continually. However, the completeness can be measured against a specific use case like increasing customer wallet share, and then consolidating all static and derived attributes to make a personalized communication. The base version of this model can be enhanced as new behavior traits emerge from customer interaction.

About the Author

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Vignesh has over 10 years of industry experience working with global retailers across retail formats. He has been part of key engagements focusing on customer 360°, customer analytics and personalization, enterprise information management, and algorithmic retailing-led business growth initiatives. Vignesh has significant experience in building customer analytics data platform and is passionate about helping retailers create a holistic view of the customer, enabling personalization.

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Retailers worldwide are adopting the TCS Algo Retail™ framework, a playbook for integrating data and algorithms across the retail value chain, thereby unlocking exponential value. Our solutions and offerings leverage the combinatorial power of new-age technologies to make businesses intelligent, responsive, and agile. TCS' portfolio of innovative products and platforms include AI-powered retail optimization suite TCS Optumera™, unified commerce platform TCS OmniStore™, and AI-powered enterprise personalization solution TCS Optunique™. With a global team of 40,000 associates, we are powering the growth and transformation journeys of leading retailers worldwide.

Contact

For more information on TCS' Retail Solutions and Services, please visit http://on.tcs.com/TCS-Retail

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