ISSN: 2754-6683

Journal of Marketing & Supply Chain Management

SCIENTIFIC Research and Community

Review Article

Open Access

Enabling Customer 360 View and Customer Touchpoint Tracking Across Digital and Non-Digital Channels

Shreesha Hegde Kukkuhalli

USA

ABSTRACT

In today's highly competitive, data-driven environment, businesses must develop a unified understanding of customer interactions across both digital and non-digital channels. A Customer 360 View, which incorporates touchpoints from these various sources, can significantly enhance customer relationship management by providing a holistic view of customer behaviors, preferences, and journeys. This paper proposes a structured approach to integrating data from these disparate touchpoints, discusses the challenges of linking data from different sources, and examines the application of advanced analytics to derive actionable insights. Through effective data integration, real-time tracking, and machine learning techniques, this paper demonstrates how organizations can create a seamless Customer 360 View for strategic decision-making. Towards the end of the paper, I present a case study where this approach was applied for a midtier asset management firm to increase retail investor revenue by 20%.

***Corresponding authors**

Shreesha Hegde Kukkuhalli, USA.

Received: September 05, 2022; **Accepted:** September 12, 2022; **Published:** September 26, 2022

Keywords: Customer 360 View, Omnichannel Engagement, Digital/Non-Digital Channels, Data Integration, Customer Personalization, Customer Journey Mapping

Introduction

Background and Motivation

With the exponential growth of customer touchpoints across digital (web, social media, email) and non-digital channels (in-store, call center), organizations struggle to gain a single, unified view of their customers. Businesses now require omnichannel capabilities to track customer interactions and tailor experiences that align with individual preferences. A Customer 360 View enables organizations to build a cohesive picture, which is critical for improving engagement and brand loyalty [1,2].

Problem Statement

While digital touchpoints are readily captured, aggregating non-digital interactions poses significant data management and integration challenges. Additionally, there is a lack of consistent identifiers across channels, complicating efforts to match interactions to a single customer entity. This typically hinders organization's ability to track customer journey over time.

Objectives

The primary objective of this research is to establish a framework for combining digital and non-digital touchpoints into a Customer 360 View, with an emphasis on addressing data silos, holistic customer journey tracking, and privacy management.

Current State Review

Customer 360 and Omnichannel Strategy

Previous studies emphasize the importance of Customer 360 as a tool for driving omnichannel customer engagement [3]. The core concept involves consolidating data across different interaction points to gain actionable insights, which is essential in crafting a seamless customer experience [4].

Digital and Non-Digital Touchpoints

Digital channels provide structured, high-frequency data, which is easily integrated into a centralized system. However, non-digital channels lack the automated tracking of digital channels. Challenges include variability in data formats, inconsistencies, and difficulty linking to customer profiles [5].

Data Integration and Analytics

Data integration for a Customer 360 View typically involves ETL processes, data lakes, and Master Data Management (MDM) systems. Studies indicate that analytics and data management tools such as Apache Kafka, Boomi, and MDM systems can facilitate this integration, helping to create a real-time data stream for analysis [6,7].

Methodology

Data Collection

Data is collected from a range of digital and non-digital sources. Digital sources include websites, social media, and mobile apps, while non-digital sources include call centers, in-store interactions, and direct mail responses. Batch extraction, streaming, APIs and IoT devices are employed to capture real-time data from these touchpoints.

Data Integration

An MDM platform like Boomi, Informatica is used to link customer data across channels by employing entity resolution techniques, such as probabilistic matching, to deduplicate and standardize records. ETL processes cleanse and normalize data before it is stored in a data lake, ready for analytics processing [8].

Customer Identification and Linking

Customer data integration requires sophisticated entity resolution methods. Deterministic methods rely on exact matches, while probabilistic methods use fuzzy matching algorithms to infer matches between disparate data points, enhancing the accuracy of customer identification across sources.

Analytics and Visualization

Using predictive analytics, we can segment customers and map their journey through machine learning models. These models, combined with data visualization tools, enable organizations to derive insights from the Customer 360 View and apply them for targeted marketing, personalized offers, and proactive customer service.

Proposed Framework

Architecture Overview

The proposed architecture comprises four layers: data ingestion, data processing, storage, and analytics. The ingestion layer collects data from various channels via APIs, while the data processing layer uses ETL to transform and load data into a centralized data lake.

Data Processing and Transformation

Data transformation includes cleansing, standardizing, and enhancing data attributes. This step is essential to ensure compatibility across different data sources and to improve the quality of insights derived.

Analytical Models

Machine learning models are applied to predict customer behavior and preferences. Clustering techniques segment customers based on interaction history, while classification models predict customer responses, enabling targeted communication.

Real-time Tracking and Personalization

Real-time analytics allows businesses to respond to customer actions instantly. Event-driven architectures enable the system to send personalized offers or notifications based on recent customer interactions.

Case Study

Background: A mid tier asset management firm had retail customer interactions through multiple digital channels such as Salesforce CRM, company web site, Khoros, Dynamic signal, Seismic as well non digital channels such as in person visit to financial advisors, company sponsored events. As the customer data collected through these various channels, firm lacked the ability to understand customer holistic journey in chronological order to identify next best action. Marketing team of asset management firm decided to build customer 360 view combining all digital and non-digital channels and use it as source for personalization.

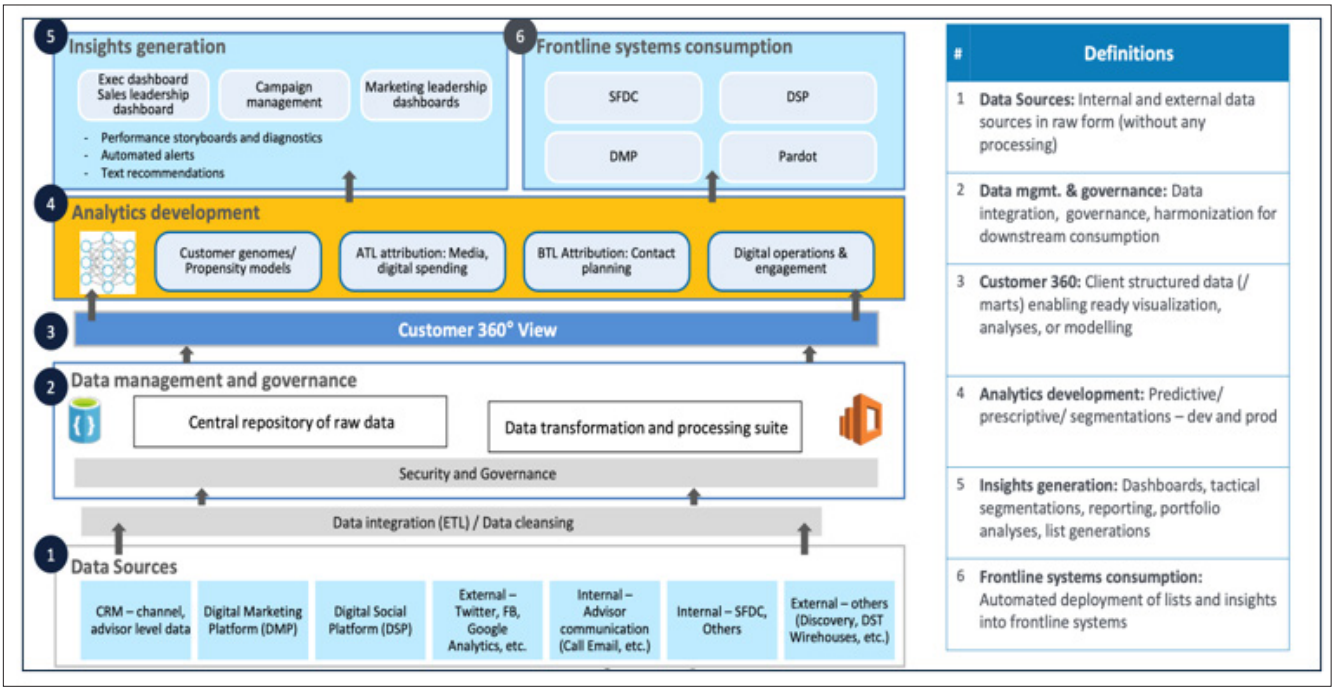
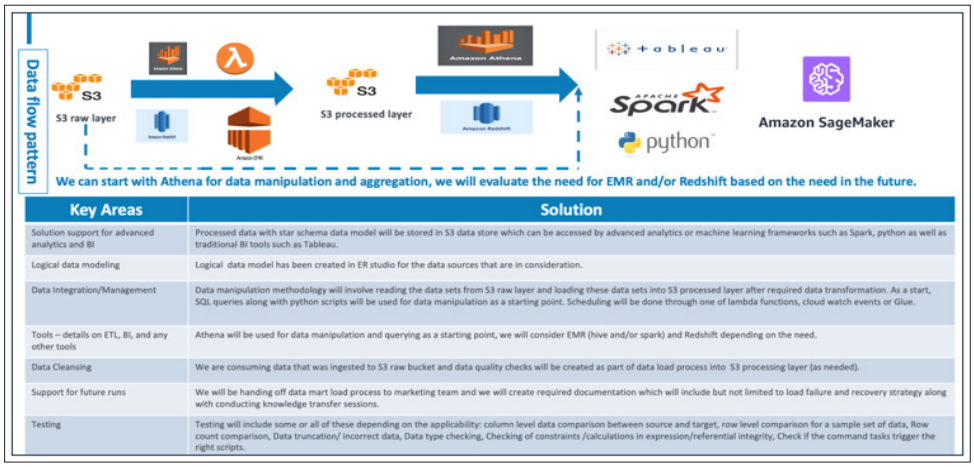


Figure 1: Data Sources and Framework to Implement Customer 360

Implementation

Following key steps are followed during implementation:

- All the data sources contributing customer related data are identified, schema of each data source was analyzed to identify specific customer attributes.
- A logical data model was built for customer 360 view with attributes to link customer elements from multiple data sources including match and merge rules.
- Target state architecture for customer 360, reporting and personalization was built on AWS using services such as S3, Athena, Redshift, Tableau, Sagemaker,
- Star schema based customer 360 physical data model was deployed in Athena, data pipelines were built based on defined transformation rules to populate the data.
- Customer 360 view in Athena is used for both reporting and machine learning driven personalization.



Key Areas	Solution
Solution support for advanced analytics and BI	Processed data with star schema data model will be stored in S3 data store which can be accessed by advanced analytics or machine learning frameworks such as Spark, python as well as traditional BI tools such as Tableau.
Logical data modeling	Logical data model has been created in ER studio for the data sources that are in consideration.
Data Integration/Management	Data manipulation methodology will involve reading the data sets from S3 raw layer and loading these data sets into S3 processed layer after required data transformation. As a start, SQL queries along with python scripts will be used for data manipulation as a starting point. Scheduling will be done through one of lambda functions, cloud watch events or Glue.
Tools – details on ETL, BI, and any other tools	Athena will be used for data manipulation and querying as a starting point, we will consider EMR (hive and/or spark) and Redshift depending on the need.
Data Cleansing	We are consuming data that was ingested to S3 raw bucket and data quality checks will be created as part of data load process into S3 processing layer (as needed).
Support for future runs	We will be handing off data mart load process to marketing team and we will create required documentation which will include but not limited to load failure and recovery strategy along with conducting knowledge transfer sessions.
Testing	Testing will include some or all of these depending on the applicability: column level data comparison between source and target, row level comparison for a sample set of data, Row count comparison, Data truncation/ incorrect data, Data type checking, Checking of constraints /calculations in expression/referential integrity, Check if the command tasks trigger the right scripts.

Results and Benefits

- Marketing team was able to increase response to campaigns by 50% using customer 360 view data.
- 20% increase in new customer acquisition and 30% increase in upsell/cross-sell with existing customers by sending right message at the right time (personalization).
- 25% decrease in infra and resource cost through modernization and consolidation.

Conclusion

A 360-degree view of the customer, which integrates touchpoint data across both digital and non-digital channels, provides a strategic advantage in today's data-rich business landscape. By combining digital data from websites, mobile apps, and social media with non-digital data from in-store interactions and call centers, organizations can gain a unified perspective of customer journeys and preferences. This comprehensive approach enables a deeper understanding of customer behaviors, allowing for more precise personalization and higher-quality customer engagement.

The proposed framework in this paper underscores the importance of sophisticated data integration, cleansing, and transformation processes, often facilitated by technologies like Master Data Management (MDM) and real-time analytics platforms. Leveraging machine learning models for customer segmentation, behavior prediction, and journey mapping enhances the ability to deliver timely, relevant interactions. Moreover, the implementation of real-time tracking allows for immediate responses to customer actions, fostering a more responsive and personalized customer experience.

Despite the significant advantages, there are notable challenges to implementing a robust Customer 360 View. The complexity of linking data across different channels, maintaining data quality, ensuring data privacy, and managing the costs of integration remain considerable obstacles. Effective data governance frameworks are essential to address these issues, particularly with respect to regulatory compliance and data security.

Looking to the future, advancements in artificial intelligence, real-time processing capabilities, and natural language processing could further expand the possibilities of customer analytics. These technologies promise to enhance predictive accuracy, automate touchpoint integration, and improve the quality of personalization, potentially transforming the Customer 360 approach from a strategic advantage to an industry standard.

In conclusion, as customer expectations continue to evolve and competition intensifies, a Customer 360 View will be indispensable for organizations aiming to improve customer loyalty, optimize engagement, and drive growth. By implementing this framework, companies can not only meet the demands of today's customers but also proactively adapt to their future needs, establishing a resilient foundation for sustainable success in the digital age.

References

1. Gupta S, Lehmann V (2005) Managing Customers as Investments: The Strategic Value of Customers in the Long Run, Pearson Education https://ptgmedia.pearsoncmg.com/images/9780132161619/samplepages/0132161613.pdf.
2. Liautaud B, Hammond M (2001) e-Business Intelligence: Turning Information into Knowledge into Profit, McGraw Hill Professional https://dl.acm.org/doi/10.5555/557435.
3. Christensen CM, Raynor ME (2003) The Innovator's Solution: Creating and Sustaining Successful Growth, Harvard Business Review Press https://www.hbs.edu/faculty/Pages/item.aspx?num=15473.
4. Rayport JF, Jaworski BJ (2005) Best Face Forward: Why Companies Must Improve Their Service Interfaces with Customers. Journal of Marketing 69: 98-111.
5. Palmatier RW (2008) Relationship Marketing, Marketing Science Institute.
6. Davenport T (2014) Big Data at Work: Dispelling the Myths, Uncovering the Opportunities, Harvard Business Review Press https://hbr.org/2014/03/big-data-at-work-dispelling-the-myths-uncovering-the-opportunities.
7. Kirkpatrick D (2010) The Facebook Effect: The Inside Story of the Company That Is Connecting the World, Simon & Schuster https://epublications.marquette.edu/zuckerberg_files_transcripts/67/.
8. Loshin D (2010) Master Data Management, Morgan Kaufmann.