

Customer Journey Mapping Tool Using AI

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Abstract—In today's highly competitive market, understanding the customer journey is essential for any business seeking sustained growth and improved customer retention. The customer journey encompasses all the touchpoints and interactions that a customer experiences with a product or service, starting from the initial awareness phase and extending through to repeat engagement and advocacy. As organizations strive to meet evolving consumer demands, customer journey mapping (CJM) has emerged as a powerful tool to visualize and analyze these interactions, ultimately enhancing customer experience (CX) strategies. By leveraging AI technologies, businesses can refine their understanding of the customer experience, improve personalization efforts, and ultimately drive better business outcomes. This research explores the use of AI-based tools in the development and implementation of customer journey maps.

Index Terms—Customer Journey Mapping (CJM), Artificial Intelligence (AI), Predictive Analytics, Customer Experience, Behavior Segmentation, Personalization in Marketing.

I. INTRODUCTION

Customer Journey Mapping (CJM) is a strategic tool used by organizations to visualize and understand the various stages and experiences that customers undergo when interacting with a business. CJM allows businesses to identify pain points, opportunities for improvement, and areas where customer satisfaction can be enhanced, making it a vital component of customer experience management. [10]

Mapping is an effective technique to analyze a consumer group's sequence of activities and the proper handoff of customers from one touchpoint to another. The purchase map enables marketers and academics to answer a series of questions.[8] A recent white paper found that organizations using data to drive their decisions were over three times more successful than those with less mature data operations. And a major component of that success was that over 98% of those organizations had a good or excellent understanding of their customers' journeys. So, it makes sense that, from banking, to healthcare, to retail, businesses across nearly all sectors are making the decision to be more data-driven.

Aspect	Traditional CJM	AI-Driven CJM
Data Collection	Surveys, interviews, focus groups	Real-time data from multiple sources
Analysis	Manual interpretation	Automated AI-driven insights
Personalization	Limited customization	Dynamic, AI-powered recommendations
Real-time Insights	Not available	Real-time analytics and predictions
Scalability	Time-consuming and resource-intensive	Highly scalable and efficient

Table 1 Traditional vs AI-Driven Customer Journey Mapping

A recent white paper found that organizations using data to drive their decisions were over three times more successful than those with less mature data operations. And a major component of that success was that over 98% of those organizations had a good or excellent understanding of their customers' journeys. So, it makes sense that, from banking, to healthcare, to retail, businesses across nearly all sectors are making the decision to be more data-driven. Since consumer behavior is being influenced more and more by digital applications, the generation and availability of data is growing at a faster rate than ever before. The convergence of Big Data, AI, and marketing can create greater customer value and several advantages for companies. [7]

Traditionally, CJM involves qualitative research, surveys, and manual data analysis. However, with the advent of Artificial Intelligence (AI), businesses can leverage automation, data analytics, and predictive modelling to enhance the accuracy and efficiency of CJM.

In consumers' perspective, well-known brand or brand with strong brand awareness in consumers' mind tend to have more advantage and having more successful sales. For the competitive market, consumers need to acquire information that help them make the decision. Besides, consumer must consider various information by using emotions and feeling to make purchasing decision.[9]

II. LITERATURE SURVEY

A tool to help businesses track the path of a customer throughout their visit. This tool visually describes performance and working based various metrics tracked from the application. Recent studies highlight the shift from traditional linear models to dynamic, omnichannel-based journey mapping approaches. Unlike traditional segmentation methods, CJM focuses on multi-

touchpoint interactions across web platforms, mobile applications, and customer support channels. This is particularly important for businesses analyzing website metrics like product listings, sales performance, customer engagement, and product returns.

For Small and Medium Enterprises (SMEs), a structured CJM framework helps in identifying key touchpoints, customer pain points, and improvement areas. By integrating real-time analytics, businesses can enhance customer satisfaction and increase operational efficiency. Businesses focusing on CJM can track and analyze crucial metrics like product performance, sales metrics, user engagement, customer retention and returns [10]. By mapping these metrics against various customer journey stages, businesses can optimize touchpoints and improve overall sales performance [10]. The integration of AI-driven analytics and Big Data has significantly improved customer journey analysis by providing predictive insights into consumer behaviors. Machine learning models help in predicting customer churn based on engagement trends, identifying bottlenecks in the purchase process, recommending personalized product suggestions based on user activity. These advancements allow businesses to automate responses and tailor marketing efforts to individual customer segments [7].

Customer Journey Mapping (CJM) is an essential analytical framework used to understand customer interactions across different touchpoints, ultimately improving customer experience and business performance. Traditionally, CJM has been employed to visualize the customer's buying process, from initial awareness to post-purchase behaviour [8]. Use of CJM to support and retain engineering students. There is only one adaption necessary in the mapping process: Representative students' profiles are not used for defining personas, but as profiles of groups of underrepresented students. from previously underrepresented groups [2].

CJM facilitates innovation by proposing new or improved services [3]. Customer journey map used in the service design was considered an important tool to discover service experiences related issues, since it could logically and contextually find problems and solves them [4]. Since consumer behavior is being influenced more and more by digital applications, the generation and availability of data is growing at a faster rate than ever before. The convergence of Big Data, AI, and marketing can create greater customer value and several advantages for companies [6]. Conceptual model of customer journey has changed from the past, from direct step to step changed to more complicated process in the present which is not an easy line and some factor has a big impact as the result of global technology. The aim of the research is that where the customer hops from this step to the next step in another place which difference from a linear line progresses from the past [9]. While browsing the web, cookies are stored on user's computers [1]. These cookies can track user activity thus compromising the user's privacy rights.

III. METHODS AND MATERIALS

The initial step of this project is to identify and elucidate the points of contact between consumers and businesses from the consumer's perspective at each stage of the customer journey. This is accomplished by analyzing and describing the process mainly through customer journey mapping (CJM). The objective of customer relationship management (CRM) is to understand customer behaviors, actions, emotions, and expectations at various points during a customer's interaction with a business. Research indicates that the customer journey experience is characterized by the fundamental components of CJM, which encompass processes, touchpoints, emotion curves, and gains.

Touchpoints signify interaction points (e.g., product purchases) and contact points (e.g., customer support inquiries). Every interaction a customer has with a business is recorded using Customer Journey Mapping (CJM) in a process-oriented manner. In contrast to conventional process documentation, which emphasizes business perspectives, CJM embraces a customer-centric approach, facilitating a more profound comprehension of customer needs.

IV. CUSTOMER JOURNEY MAPPING APPROACH

CJM visualizes customer interactions with a business, aiding the optimization of engagement strategies. This study analyses businesses as organizations while examining their customers as users navigating various touchpoints. It also considers prospective customers and returning clients, as they are vital in customer journey analysis.

The customer journey mapping process is carried out in several steps:

1. Defining Personas

The research begins with defining customer personas that represent the different types of users interacting with the business. Data is gathered from various sources, including surveys, transaction records, and website analytics. Personas provide insights into customer demographics, behaviors, motivations, and expectations.

2. Identifying the Customer Journey Phases

The customer life cycle serves as the foundation for CJM. Key phases include awareness, initial purchase, customer satisfaction, repeat purchase, and retention/loyalty.

3. Identifying Touchpoints and Communication Channels

All direct and indirect touchpoints are documented, including digital (e. g., websites, chatbots, emails). Various communication channels, such as social media and emails are also examined.

4. Customer Journey Map Visualization

A customer journey mapping tool analyses behavioral, transactional and historical data which helps in summarizing all touchpoints, pain points, and areas for improvement. The strengths and weaknesses of customer interactions are identified to formulate strategies for enhancing the customer experience. The visual representation aids businesses in decision-making and optimizing CX strategies.

5. Developing Measures for Optimization

The insights derived from mapping are utilized to propose AI-driven automation, personalization, and predictive analytics to enhance CX. Weak points in the customer journey are addressed through digital transformation strategies.

V. RESULT

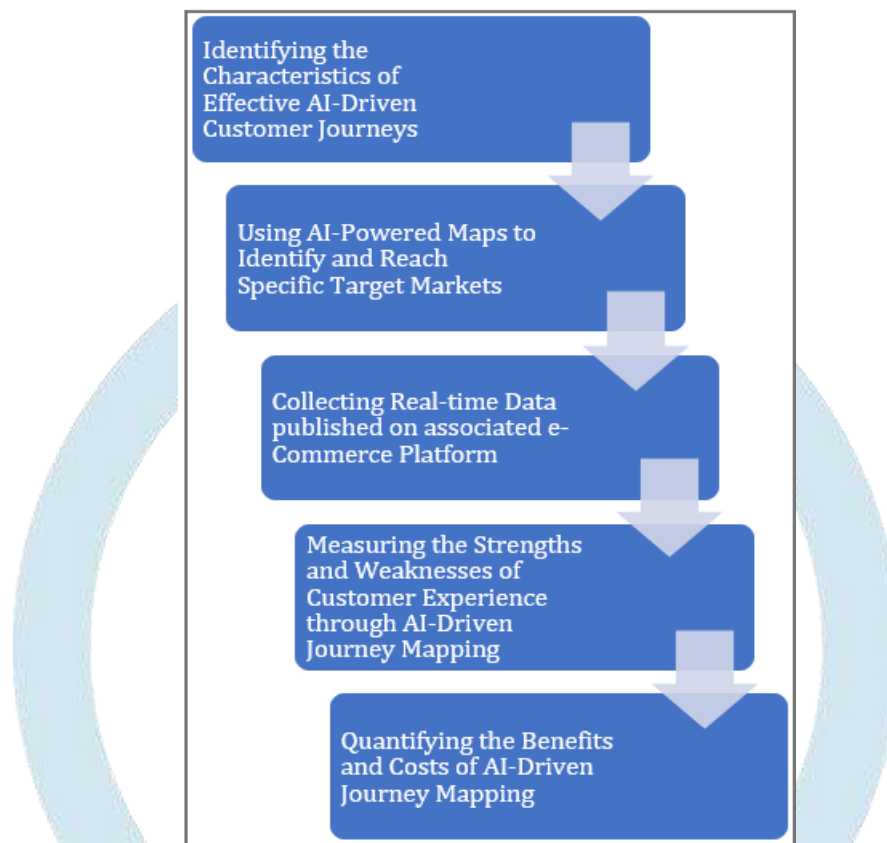


Figure 1 Implementation flow

1. Identifying the Characteristics of Effective AI-Driven Customer Journeys:

AI-driven customer journey mapping leverages machine learning (ML) and natural language processing (NLP) to analyze extensive customer data in real-time. AI identifies patterns and trends in customer behavior, allowing businesses to develop journeys that are both effective and adaptable to evolving customer needs. Effective AI-driven journeys are defined by Personalization, Predictive Analytics and Dynamic Adaptation, each of these points can be elaborated as:

- Personalization: AI algorithms assess customer behavior, preferences, and historical data to generate hyper-personalized journey maps.
- Predictive Analytics: AI forecasts future customer actions and preferences, facilitating proactive journey adjustments.
- Dynamic Adaptation: AI continually revises journey maps based on real-time data, maintaining relevance and precision.

2. Using AI-Powered Maps to Identify and Reach Specific Target Markets:

AI-powered maps yield actionable insights into customer segments, enabling businesses to effectively customize their strategies and messaging for specific audiences. Customer groups can be segmented by understanding their interactions over the web, AI enhances the segmentation and targeting of specific markets by inducing Behavioral Segmentation, Predictive Targeting, Sentiment Analysis and Automated Campaign Optimization. each of these methods can be described in detail as follows:

- Behavioral Segmentation: AI evaluates customer interactions to create micro-segments based on behavior, preferences, and demographics.
- Predictive Targeting: AI anticipates which customer segments are most likely to convert or engage, facilitating precise targeting.
- Sentiment Analysis: AI assesses customer sentiment across various touchpoints to pinpoint high-potential markets.
- Automated Campaign Optimization: AI fine-tunes marketing campaigns in real-time to maximize engagement and reach within target markets.

3. Collecting Real-time Data published on associated e-Commerce Platform:

The publication of real-time data consisting of the Number of Products available, Products sold, Total Revenue generated, Revenue generated from different categories, etc. over the Analytics Dashboard will be used to give AI-Driven suggestions based on the model being used. This data will provide the business insights about the performance of their platform across different product categories, best-selling products, profit earned, etc. The AI will assess these metrics and suggest changes accordingly which may then help their business flourish. The following points are responsible for creating a suitable visualization of the data and induce AI-Driven suggestions to the business:

- Real-Time Data Collection: Collecting real-time data from the e-Commerce platform to feed this data to the model helping it create suggestions based on the presented data.

- Data Visualization: The AI model creates a detailed visualization of data based on the real-time data collected from the platform, in various forms like bar graphs and pie-charts to help understand the data distribution in a more presentable form.

4. Measuring the Strengths and Weaknesses of Customer Experience through AI-Driven Journey Mapping:

AI offers a thorough and objective evaluation of customer experience, highlighting areas for enhancement and implementing effective strategies. AI facilitates a data-driven evaluation of customer experience by:

- Journey Analytics: The AI model monitors customer interactions across touchpoints, measuring metrics such as drop-off rates, conversion rates, and time spent.
- Root Cause Analysis: AI identifies fundamental issues causing friction in the customer journey, enabling focused improvements.

5. Quantifying the Benefits and Costs of AI-Driven Journey Mapping:

AI-Driven Customer Journey Mapping offers quantifiable advantages, but businesses must balance these benefits with the related costs to ensure a favorable return on investment. Customer Journey Mapping provides measurable benefits, including:

- Increased ROI: AI identifies high-impact touchpoints, allowing businesses to allocate resources more efficiently.
- Cost Efficiency: Automation minimizes manual efforts in data collection and analysis, reducing operational costs.
- Enhanced Customer Lifetime Value (CLV): Tailored journeys boost customer retention and loyalty, thus increasing CLV.
- Scalability: AI can manage large datasets and complex journeys, making it suitable for businesses of all sizes.

VI. CONCLUSION

The AI-driven customer journey mapping tool represents a significant advancement in how businesses understand and interact with their customers. By leveraging the power of artificial intelligence and machine learning, this tool will empower businesses to create seamless, personalized, and effective customer journeys, ultimately driving growth and customer loyalty.

VII. FUTURE SCOPE

Hyper-Personalization at Scale: AI will advance beyond traditional segmentation to real-time, hyper-personalized experiences. By integrating AI with IoT and edge computing, businesses can deliver tailored recommendations instantly across multiple channels. Real-Time Adaptive Journey Orchestration: AI will evolve to dynamically adjust customer journeys in real-time, responding to behavioral changes, external factors (e.g., weather, economy), and emotions detected through sentiment analysis.

AI-Generated Synthetic Data for Enhanced Predictions: With privacy concerns limiting data collection, AI will generate synthetic customer data that mimics real-world interactions, allowing businesses to train models without infringing on user privacy. Autonomous AI Agents for Proactive Customer Engagement: Future AI agents will anticipate customer needs before they arise, automatically reaching out with solutions, offers, and assistance, reducing customer effort to near zero.

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