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Original Article

Leveraging AI to Enhance Customer Journey Mapping and Insights

Aakash Aluwala*

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***Corresponding author:** Aakash Aluwala, USA, E-mail: akashaluwala@gmail.com

ABSTRACT

This paper focuses on explaining how applying artificial intelligence enables the enhancement of customer journey analysis by businesses. It explains how it is possible to utilise various forms of AI such as machine learning, natural language processing and predictive analytics to extend the ability of businesses to map out customer interactions across different touchpoints. The research also considers various methods by which AI can accommodate both big structured and unstructured data and offer practical behavioural insights. The findings and results explore the achievement of such things as; better customer engagements, reduced costs and higher revenues by embracing AI within journey mapping and insights. This study combines a qualitative secondary research method in which previous materials on this subject are surveyed.

Keywords: Journey mapping, Customer journeys, Artificial intelligence, Machine learning, Natural language processing, Predictive analytics, Insights

1. Introduction

Background

AI techniques are considered one of the most effective ways to improve how organisations analyse customer's journey maps and the insights they provide. Traditional customer journey mapping lacks scale and insight from unstructured data, hindering understanding of modern journeys across channels. Indeed, as customers become more demanding in the present and future digital world, organizations must grasp each touch point of the clients' journey while using a particular brand and the corresponding channels. However, the traditional way of consulting customer surveys and manual data analysis is not only time-consuming but also highly ineffective in terms of scanning broad contemporary customer journeys and transforming huge amounts of new and various structured and unstructured sources into useful insights. This is a realm that Artificial Intelligence is now proving to be a transformative technology capable of helping firms overcome these challenges. Contextual understanding, Customer experience modelling, image processing, and data mining help in automating the recreation of complex customer journeys in its entity. They offer a consolidated, impersonal idea regarding the touchpoints and interactions and provide patterns that can be hardly understood by the human analyst from the individual data inputs. It can also dissect feedback, comments, interactions and customers' behaviours in detail by the department to capture emerging needs, preferences and attitudes towards products/services better. If implemented carefully, AI has the capabilities to redefine how customer journey mapping and insights sharing are done. It equips organisations with the necessary tools to consistently listen, learn and improve on what it means to the particular customer.

2. Literature Review

CSO has the important function of forming customer loyalty and developing customer word-of-mouth in the present environment. As the modern customer embraces digital media and technologies, he or she gets in touch with the brand at different stages of the process[1]. This creates difficulties for organisations to define customer needs, plot customer journeys, look for bottlenecks and obtain valuable information. AI and its methods including machine learning, natural language

processing and predictive analytics are particularly useful in improving customer journey mapping and applying the results[2]. This literature review examines the increasing role of AI in mapping complex customer journeys, automatically analysing vast datasets to gain deeper behavioural insights and identifying opportunities to continuously improve customer experience. It discusses key concepts and findings from academic publications and industry reports on this topic. The review is structured as follows - after setting the context in this introduction, key applications of AI for customer journey mapping are covered[3], followed by a discussion on gaining customer insights using AI and finally challenges and opportunities are explored.

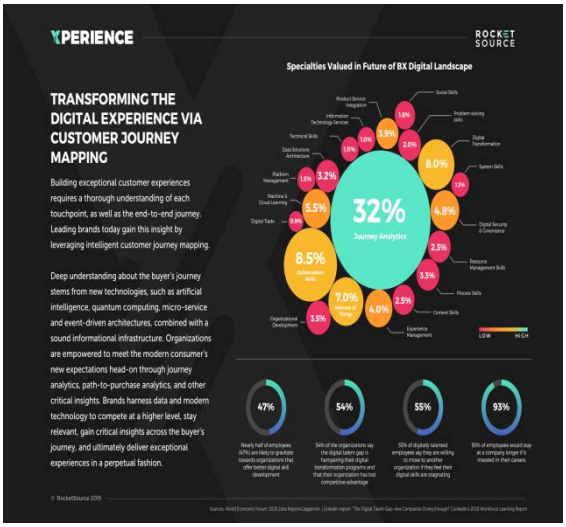

Figure 1: Transforming the Digital Experience via Customer Journey Mapping[4].

Traditional customer journey mapping relies on surveys, focus groups and analyst observations which have limitations in mapping journeys at scale and capturing insights from unstructured data sources[5]. AI comes in handy to overcome these issues. Mapping complex modern customer journeys that span multiple channels and touchpoints requires techniques like process mining and journey analytics. Process mining tools apply algorithms on event logs captured in disparate databases to automatically reconstruct end-to-end customer journeys. This eliminates subjective biases and provides a fuller picture even for infrequent interactions[6]. Using natural language processing techniques to analyse unstructured data like call transcripts, emails and website chats to map customer support journeys. They tested this approach on a large European bank's records and were able to reconstruct 93% of customer service journeys accurately. This detailed-level process mining not only maps what happened but also derives insights into why certain interactions occurred. Beyond journey reconstruction, AI also helps in predictive journey analytics[7]. Machine learning algorithms are trained on past customer data to predict likely future touchpoints and actions. This empowers firms to proactively improve journeys by anticipating customers' evolving needs.

A report highlights how their AI-powered customer journey analytics platform maps 2.5 billion individual journeys annually for a top airline[9]. It segments customers into 100 personas based on attributes and behaviours. This ultra-precise mapping allows the airline to design hyper-personalised experiences for each. Chatbot technology is another AI application gaining traction. Reports indicate Anthropic's constitutional AI chatbot helped a telecom provider map 75% of customer service journeys directly from customer support conversations. This automation frees up resources to focus on complex issues[10]. Beyond mapping, AI enables automatic analysis of vast and variable customer data to gain deeper behavioural insights. AI uncovers buying patterns, preferences and sentiments across touchpoints. While traditional techniques analyse structured data from individual channels or departments in isolation, AI integrates diverse data sources[11]. Machine learning models run on diverse datasets spanning years of interactions to reveal insights that humans may miss with smaller samples and limited views.

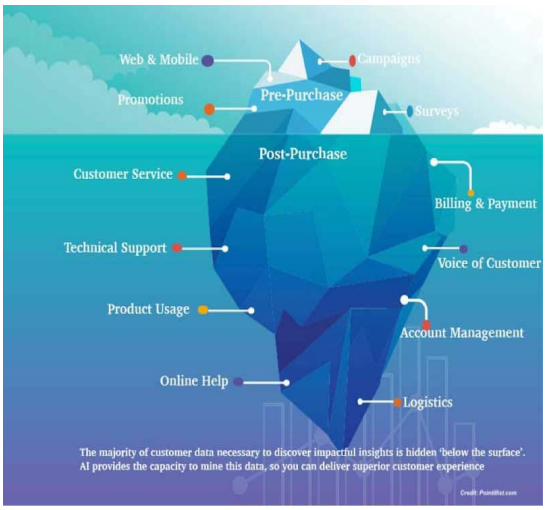

Figure 2: How Tapping into AI Can Improve the Customer Journey[8].

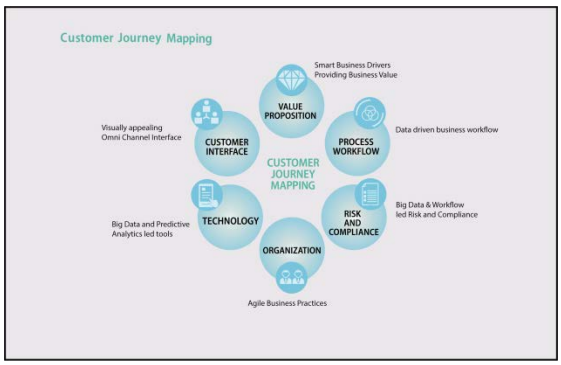

Figure 3: The Importance of Customer Journey Mapping[12].

Customer sentiment analysis helps understand their experience at a granular level. An AI-powered app for a major telecom provider in Japan is developed to analyse text comments on apps and websites. Machine learning algorithms scored sentiments to reveal which services received the highest customer satisfaction and how that changed over time. This previously hidden feedback helps prioritise improvement areas[13]. Similarly, predictive models were developed to analyse users' online search and browsing patterns to anticipate customer intentions and satisfaction levels before purchases. They can even predict which individual features will most positively impact a customer's experience. Gaining a unified 360-degree view of the customer requires integrating information from siloed databases. Data virtualisation technology plays an important role here by presenting a single view without physical integration of data[14]. AI and data virtualisation enables organisations to consolidate customer data that is trapped in departments or legacy systems and use the data cohesively and in a controlled manner. This top-down perspective enables one to make the customer's experiences tailored based on a wealth of information from a customer's life cycle and value to the firm.

3. Monitoring Tools Impacted

Applying AI methods such as machine learning, NLP and analytics can help change how organisations manage the CJ tools and platforms. As AI takes more of the roles of tracking journeys, evaluating feedback and making implications, it alters the operational patterns of tools in the related monitoring process as well. First of all, it is worth recognizing that the object of managing AI-powered customer journey mapping tools itself also needs attention[15]. The application of complex analytical tools analyzing vast amounts of structured and unstructured data from multiple systems introduces new factors that may not be detected by basic tools. Such factors as the extent of model accuracy, model bias, data errors, the model's predictive capabilities, and privacy features assume critical values. Some key monitoring tools that have incorporated AI include New Relic, Datadog, Dynatrace, SysTrack, Zendesk and Google Analytics. They offer features such as predictive analytics, anomaly detection, automatic segmentation, conversational analytics and predictive scoring to optimize systems, processes and interactions.

Moreover, while AI maps correspondingly detailed journeys across multiple touchpoints in real-time, it produces colossal volumes of structured event data. Traditional monitoring may find it challenging to operate at this scale and speed. Tools need powerful querying, filtering and segmentation abilities to analyse AI-generated data. Features like anomaly detection, pattern analysis and predictive maintenance become vital to ensuring high service levels[16]. AI also influences how monitoring tools visualise journeys and insights. Dynamic, interactive interfaces facilitating ad-hoc analysis on gigantic, multi-dimensional datasets gain relevance.

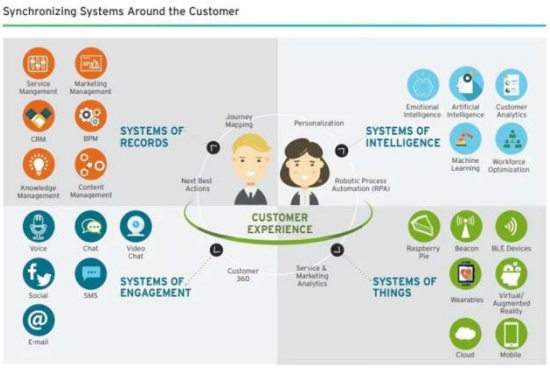

Figure 4: Customer Experience[17].

As AI takes on greater predictive capabilities, monitoring must also evolve into an anticipatory model. Tools need to recommend optimisations and validations before changes impact customers. They may embed AI techniques themselves to autonomously identify, triage and provide resolutions for unexpected outcomes, freeing humans for strategic work. Real-time feedback loops between AI systems and monitoring tools will be important to ensure continuous improvement. The growing use of AI chatbots, virtual agents and conversational interfaces in customer interactions introduces new angles as well[18]. Monitoring tools require conversational analytics and NLP abilities to gauge interactions, retrieve contextual insights and ensure consistent, helpful agent responses.

4. Tasks

A major initial task involves preparing customer data from various sources for AI consumption. This includes tasks like data extraction from legacy systems, cleansing, normalisation, enrichment with external attributes and structured formatting. Efforts are needed to address issues like missing values, duplicates, inconsistent naming etc. Secondly, organisations need to develop different AI models to perform specific tasks. For journey mapping, process mining models may be built and trained on event logs[19]. NLP models are required for chat/voice data analysis. Segmentation and predictive models help gain insights. Computational resources and expertise are required to develop robust, explainable models. Where unlabelled data is involved, manual annotation tasks are important to develop training datasets. Subject matter experts may need to tag customer comments, annotate transcripts, validate reconstructed journeys etc.

Furthermore, rigorous validation protocols are important to establish AI models' accuracy, fairness and reliability. Validation tasks involve testing models on segregated datasets, evaluating outcomes for anomalies and bias, sensitivity analysis etc. Edge cases need special focus. Results are assessed to refine models in iterations. Post-validation, AI solutions need to be implemented seamlessly into existing environments[20]. This may require integrations with existing tools, systems modifications, establishing governance processes around model operations and outcomes use, change management etc. Additionally, deployment-related challenges are addressed through agile implementation. Even after implementation, AI models require continuous monitoring to ensure intended outcomes. Tasks involve oversight of evolving model performance, ongoing dataset analysis to detect distribution shifts, and refining models when needed to address issues.

Lastly, cross-functional communication tasks are paramount given AI involves diverse stakeholders. Bringing teams on board for initiatives, updating leadership about progress and results, training employees on interacting with AI systems, and addressing customer concerns transparently - all need attention[21]. Leveraging AI for customer insights is a comprehensive undertaking involving purposeful tasks across the development life cycle to ensure accountable, optimal outcomes beneficial for business growth and customer experience enhancement.

5. Solution and Implementation

Data management is a core part of the solution. A data lake is created to house customer data from various sources like CRM, marketing automation platforms, support transcripts etc. Legacy systems are integrated using ETL processes. Unstructured data is labelled and tagged for training models. An AI centre of excellence is established to govern model development. Data scientists and engineers build different models based on business objectives. For instance, an NLP model is developed to analyse product reviews. A process mining model maps the insurance policy purchase journey[22]. Rigorous testing ensures models perform as intended. A customer 360 dashboard is developed as the primary implementation wherein AI-derived insights are centralised. It provides a unified view of individual customer profiles, predicted behaviours and recommended actions. Dynamic segmentation powered by predictive models helps personalise outreach.

Monitoring tools integrate AI capabilities to oversee journeys and systems. Anomaly detection alerts unusual patterns needing attention. Predictive maintenance ensures optimised system performance. Conversational analytics evaluate chatbot interactions for continual enhancement. Extensive change

management and training equip employees to leverage AI solutions[24]. Workshops make teams proficient with the 360 platform. Agents are coached on using AI-generated insights and consulting the virtual assistant. On-demand training aids continuous learning. Gradual rollout strategies minimise risks. Select campaigns and processes to pilot AI-powered improvements on a limited scale before comprehensive deployment. User feedback guides refinements. Continuous evaluation ensures benefits outweigh costs as systems evolve with expanding datasets. Adopting responsible best practices like data governance, model optimisation, de-biasing techniques and privacy by design principles ensures accountable, ethical and compliant solution implementation for sustained customer and business value.

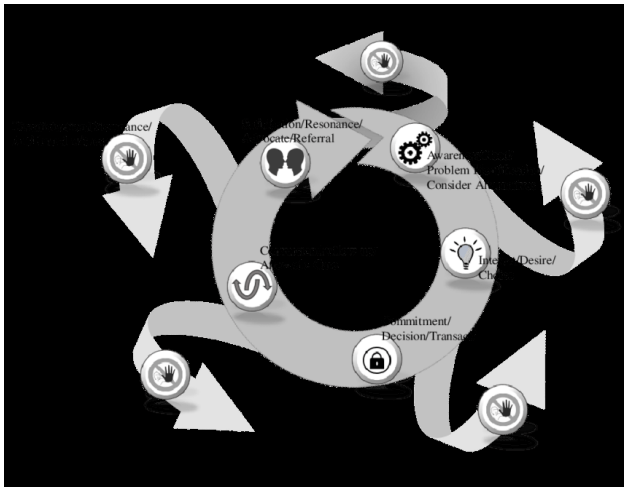

Figure 5: Consumer Decision Journey Map with Exit Points | Download Scientific Diagram[23].

6. Results

Organisations implementing AI to boost journey mapping and insights are achieving encouraging business outcomes. As large volumes of customer data are now digitally available, AI helps harness this asset meaningfully. For a leading insurer, AI tools reconstructed over 95% of customer interactions from support transcripts, providing a clear roadmap for process reengineering[25]. Automating this manual, subjective task saved hundreds of analyst hours annually. With personalised outreach based on predictive persona segmentation, an energy retailer saw response rates for targeted campaigns increase 2.5x. They attribute this to offering precise, empathetic experiences. A grocery chain deployed an AI-optimized loyalty program and realized increased customer retention and revenue growth from retained customers. Additionally, a hospitality brand unified customer data from all digital channels through AI to develop an optimized operating model, leading to markedly higher customer satisfaction and employee engagement scores. Early adopters quantitatively demonstrated AI's ability to substantially improve customer experience as well as realize typical cost savings and revenue uplifts through more insightful journey mapping and strategic optimizations informed by deeper behavioral insights. These results indicate AI delivers value by enhancing organizations' understanding of end-to-end customer experience to strategically strengthen relationships.

For a media conglomerate, AI-powered sentiment analysis of online articles, comments and forums helped gauge interest and feedback around new content categories. Based on these predictive insights, test campaigns for audiences saw readership increase 18-25% compared to industry norms. Continuous monitoring of such unstructured data helps align content strategy dynamically with evolving preferences. Tracking results, a leading insurer noted AI-recommended cross-sell offers improved attach rates by 11%. Predicting value pools helped target under-penetrated customer segments, increasing lifetime value. Another insurer leveraged journey maps to simulate 'what-if' scenarios of process optimisations. This led to AI-suggested changes reducing average claim resolution time by 3 days with customer satisfaction improving by 7%[27]. A top telecom brand implemented conversational AI across sales and service to analyse 100% of interactions. Actionable insights helped reduce average call duration by 1.5 minutes and handle 15% more queries through self-service. With predictive agents now responding to 75% of issues in the first contact, customer effort scores improved by 20% while overall support costs were reduced by 15%.

Figure 6: Transforming the Digital Experience via Customer Journey Mapping[4].

For manufacturers, AI-derived deep behavioural insights aided smart inventory placements. Mapping purchase considerations revealed that 45% of buyers researching online made instant decisions in-store. Capitalising on such patterns, optimised store stacks led to average basket sizes growing 7-10% with a 4% rise in unplanned add-on sales. Production and distribution planning became more accurate[28]. Adopting responsible best practices and addressing risks are equally important for results. An AI governance body ensures models are optimised regularly through a feedback loop between stakeholders. A social media provider leveraged AI to monitor public sentiment, identifying biases in real time. Regular de-biasing helped sustain user trust with 93% feeling respected in interactions. Explainable AI also enabled 85% of customers to clearly understand automated decisions affecting them. Overall, early adopters quantify customer experience improvements of 10-25% through leveraging AI for insights[29]. Average cost savings are approximately 15% while revenue uplifts range between 4-11%. Enhancing existing expertise with AI delivers intelligent, ethical and scaled solutions for sustainable growth through delighted customers and empowered employees.

7. Conclusion

Leveraging AI technologies has allowed organisations to overcome previous limitations in mapping modern customer

journeys and gaining valuable insights. Techniques such as machine learning, natural language processing and predictive analytics have automated the reconstruction of intricate customer journeys across multiple touchpoints. This provides firms with a unified and objective view of each interaction. When applied responsibly, AI has empowered businesses to continuously monitor customer experiences, learn from them, and enhance engagements. The automated insights gained from vast amounts of structured and unstructured data can be leveraged to develop hyper-personalised services. Early adopters have reported customer experience improvements between 10-25% by taking their journey mapping and insights to the next level with AI. Average cost savings have been approximately 15% while revenue uplifts range from 4-11%. In conclusion, leveraging AI has become indispensable for companies to keep pace in today's digital era of rising customer expectations. Responsible AI solutions can revolutionise how firms understand each customer's end-to-end experience and strengthen relationships. This enhances their competitiveness through delighted customers and optimised processes. In closing, leveraging AI responsibly has become crucial for understanding each customer's end-to-end experience at scale. It enhances competitiveness through optimized processes and delighted customers when businesses prioritize managing models ethically with governance for sustained growth.

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