

SERVICE INNOVATION IN CUSTOMER INTELLIGENCE FROM AI PERSPECTIVE: A SMART FRAMEWORK FOR TOURIST CUSTOMER EXPERIENCES

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ABSTRACT— This research aims at introducing a theoretical and practical framework for building a customer experience management system based on smart services. The current trends of technologies can help enterprises in the travel industry to know their customers thoroughly, capture and manage customer experience, facilitate customer experience, and to provide intelligent, adaptive, and personalized services to each customer based on the customer experience. The proposed framework extends the current customer experience management by proposing a new facet to represent and manage the customer experience in order to provide smarter services to customers. In general, this framework constructs a customer experience management infrastructure for a tourist company that manages customer experience related to the customer to improve smart service access and usage. In particular, this framework is the starting point to trigger the paradigm shift by elaborating a customer experience management system that provides smart services and integrates those services with traditional customer relationship management.

Keywords — AI, Big data, Tourism, Service innovation.

I. LITERATURE REVIEW

AI is well known that the phrase “Artificial Intelligence” means different things to different people. The question of what AI is all about probably does not have just one answer. What AI is depends heavily on the goals of the researchers involved, and any definition of AI is dependent upon the methods that are being employed in building AI models. Most practitioners would agree on two main goals in AI. The primary goal is to build an intelligent machine. The second goal is to find out about the nature of intelligence. Both goals have at their heart a need to define intelligence AI people are fond of talking about intelligent machines, but when it comes down to it, there is very little agreement about what exactly constitutes intelligence. It follows that little agreement exists in the AI community about exactly what AI is and what it should be. We all agree that we would like to endow machines with an attribute we really cannot define, needless to say [1].

Tourism organizations operate in a volatile and service-demanding environment with high labor costs to ensure a balanced service provider to customer ratio. These organizations have big data analytics ranging from marketing, bookings and reservations, customer requests, service orders, and transaction touchpoints. Um, et al. (2020) compared the effectiveness of using an AI Chatbot to self-service in different hotel operations. The rationale for using management information systems in service information is to capture data from all customers correctly and respond to each customer on time to sustain the sustainable hospitality factor in tourist experiences [2].

The current technological advancements have convened conversational Chatbot that can engage with customers to respond to their inquiries and reach out to service providers to inform them of the customer needs. These Service Innovation technologies using AI help in textual data collection in more variety and better scale than the scope that service providers can collect from the customers personally [2]. Therefore, the Chatbot technology has been introduced in tourism facilities to cushion labor costs and leverage hotel service to deliver sustainability. Therefore, service innovation is a smart framework that improves the customer experience in tourism.

Holmlund et al. (2020) account for AI usage in customer experience management in organizations through big data analytics. This technology is applicable in mining texts from the customers in the business-to-business interactions to assess their changing needs, demands, satisfaction, and feedback [3]. Organizations that invest in Service Innovation access insightful data from the customers to inform the management of weak service areas and the organizational service strength. This data mining process allows the organization to collect relevant information about customer behaviors and preferences to help in decision-making [4]. This approach promotes effective customer experience management through data collection in the different service touchpoints in an organization, which is conceivable in a sustainable culture. The study recommends using BDA to promote customer experiences and optimize loyalty.

Data-driven organizations are shifting to digital knowledge management systems to strategize their networking and decision-making processes in the quest to attain competitiveness. IT-based services in hospitality organizations provide extensive data that necessitates Service Innovation through AI in mining and analysis to assess predictive data patterns and draw business metrics such as customer behavior [5]. However, organizations lack sophisticated systems supporting frequent data updates from different service points, mandating human resources in different touchpoints such as the server to monitor the databases. Thus, Le Dinh et al., (2018) concluded in their study that organizations with big data analytics require innovative knowledge management systems to sustain continuous service delivery [5].

Naumov (2019) reported that organizations that approach their customers as co-creators use their feedback to develop their business models to manage customer expectations. In the tourism industry, the customers are valuable stakeholders that dictate the type of services they need based on data from information systems, especially in marketing. Service innovation frameworks help the management orchestrate the right services to the right customers to address market diversity issues through strategic tourism product positioning [6].

The introduction of robots in key service charters such as vending and dispensing machines has replaced the human touch between the service provider and the client. Slight issues in service deliveries that cripple service access or slow the service negatively affect customer experience. Thus, service innovation is a smart framework in hospitality to promote standardized services and avoid human errors that may cause service dissatisfaction. Errors in service delivery make the customers feel less worth their money, and they may approach other service providers and transfer to their establishments. Customers have their expectations, especially those in premium categories; thus, poor service access may lead to loss of trust and loyalty due to low satisfaction [7].

Successful AI framework introduction in the business sustain enormous monetary implications to the organization, including manageable labor costs and real-time customer feedback that promote satisfaction. Service innovation through AI reduces labor costs while prompting quicker responses than classical service delivery approaches. According to Lukanova and Ilieva (2019), automated customer service systems require less supervision, yet they provide optimal profitability and efficiency in the organization [8].

Experiential services in tourism are intangible and are consumed simultaneously with service production or delivery. AI is an integral element that complements humans to deliver these services, providing them with essential information. Service innovation at the customer care desk uses AI to collect customer feedback on the preferred hotel services. It supports automated bookings and itinerary development while the front office attendants check-in the hotel's guests [9]. Artificial travel intelligence is a feature adopted in hotels to simplify, automate, and customize travel arrangements. In their study, Ameen et al. (2020) report that customers prefer AI travel plans, citing the personalized experiences based on their behavioral and interest inclinations. Hotels can use service innovation to cut out travel agents to save on time and money and win the customers' loyalty through satisfactory travel arrangements with limited troubling calls [10].

II. HOW IS CUSTOMER INTELLIGENCE RELEVANT?

There are numerous ways in which consumers' adoption and increased use of smartphones and other network technology is changing the landscape for customer intelligence. Below, we discuss specific types of information that the use of connected devices can make available to businesses and how marketers may be able to leverage this information. Importantly, we believe that these technological advances will present marketing scholars with excellent opportunities to expand the frontiers of consumer research.

A. TIME AND DYNAMIC BEHAVIOR

Marketing research has long been interested in how preferences vary as a function of time. This includes the literatures on temporal discounting, temporal construal, and self-control/delayed gratification, and work studying time-of-day effects on marketing response. However, most prior research on dynamic consumer behavior was limited in its ability to measure and/or manipulate variables related to time, potentially confounding a variety of non-temporal factors that may affect preference, such as travel costs, interruption, or risk [11].

Since consumers increasingly perform decision and consumption tasks via their smartphones, incorporating variables such as a consumer's chronotype or the time of the last interaction with a customer into the marketing decision support systems will allow marketers to present messages and offers when consumers are most likely to be receptive and able to fully process them. For example, an advertising network that possesses knowledge about the consumer's chronotype should be able to selectively target ads requiring greater attention and cognitive processing to the consumer when she is at her peak time and then target ads using more peripheral cues and simple messages when she is at her off peak time, achieving greater effectiveness with both ads [12].

B. CUSTOMER LOCATION AND NAVIGATION

In addition to the customized timing of marketing activities, there is also considerable current interest in location-aware targeting. Location has been a central construct in studies of which retail locations a shopper will choose and how shoppers react to store layout [13]. Empirical work using wireless sensory data has shown that location-aware promotions for nearby stores have greater effectiveness and that in-store promotions have similar potential. Smartphones are able to track their location using GPS, Wi-Fi, and Near Field Communication (NFC, Bluetooth), allowing both general and precise location. Beyond using location information for mobile targeting in general, marketers can also track what stimuli in the physical environment a consumer viewed. Such exposure information can then be used to adjust digital signage, providing personalized messages and offers through displays, and to track and influence consumers' navigation through retail spaces. Already, smartphones have the ability to measure the consumers' speed, which will allow mobile advertisers to ignore those patrons who are passing through a given area but who cannot safely respond to an ad. Research into location factors is still in its infancy, but it is likely that location will become an influential factor in marketing strategy [14].

III. THEORETICAL APPROACH

This research will be based on the AI perspective in developing Customer intelligence systems through service innovation. The innovation is a trans-disciplinary perspective that serves different service chatter domains, including the management, service science, and the technology perspective. The system's sole purpose is to support data mining, organization, interpretation, and prediction to respond to automated services or commands to the service team. However, implementation of the service innovation is prone to internal and external factors in the organization, which leverage an analysis to support a practical implementation framework.

The technological architecture must have a knowledge objective with different variables to help the system to differentiate captured, organized, semantically, and situational knowledge. It should also program itself to respond to customer demands in other commands without crashing [5]. The technology must have the ability to derive content from the customer commands in the touchpoints, organize the information based on the clientele, time, and location of the power to ensure it transfers the right orders to the suitable databases for action. More sophisticated service systems understand the commands and respond with an application; for instance, automated machines have technologies that collect, synthesize, and respond to the customer needs with no need for human interface during the service.

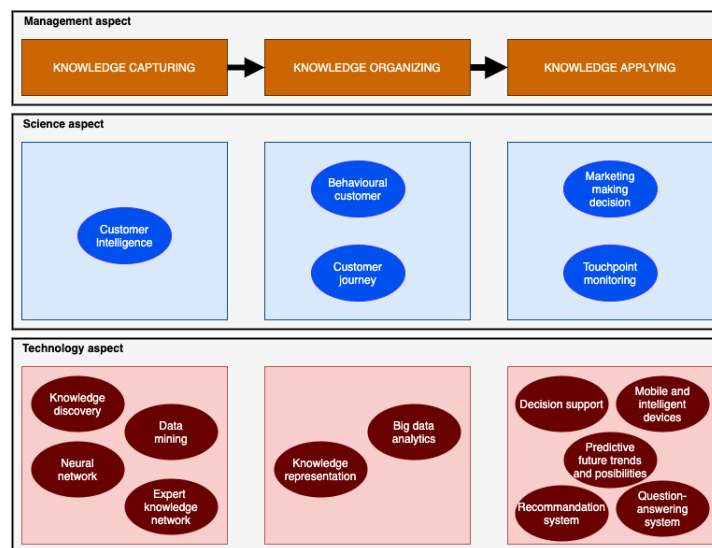


Figure 1. Illustration of management, science, and technology aspects in AI service innovation

A. KNOWLEDGE CAPTURING

The AI Service Innovation system supports management through knowledge management about the customer's demands, trends, and feedback. The system supports knowledge capturing during data entry in service points and when the customer uses automated services within the establishment [15]. When filling the short open-ended surveys in the service points, the system transported the narrative information to the server and forwards it to the human interface for interpretations.

A strategic service innovation system captures personal customer details and stores them in customized folders to support correlational analysis on customer demands, feedback, and length of stay. For instance, this aspect may help the service team understand individual customers' behaviors and provide customized experiential services. As a result, the AI Service Innovation system supports the service providers to influence satisfaction among the customers or understand why they argue about specific services, for instance, substandard housekeeping [10]. The organization keeps track of the customer journey, for example, the transactions, and captures service preferences applicable in setting up a safari for the regular customers in the future.

B. KNOWLEDGE ORGANIZING

The system displays the data back to the customer or the service provider for service applications. An effective strategy should provide decision support and recommendations on how to approach the service as requested. This function entails reconfiguring the data and providing the service such as vending or sending the data to human support for action. Significantly the system organizes data based on the organization's service type, such as reservations, purchasing specific drinks or foods on the menu, and common inquiries [15]. A service system that can organize numerical data and identify non-numerical data trends should provide predictions for future trends through graphical representations or correlational support [10].

The current clientele is tech-savvy and prefers digital operations over the phone or a laptop. Therefore, it is essential to reconfigure the AI service technologies to connect them to personal mobile phones during check-in. A hotel can develop an app with all the digitalized services to allow the customer to engage in personal activities as he orders for food, magazines, or book a slot in a trip [16]. Critically, the questioning answering system provides real-time access to information through bots and virtual administrators.

C. KNOWLEDGE APPLYING

Based on the customer data series, the system can compare the information to other customers in assessing common trends. These functions ensure that the system understands the current and future needs. The data is crucial for strategic marketing by targeting the right clientele with the right product and services. The AI system also evaluates clients' interactions with the products to establish an integrated and inclusive service and product portfolio and lead the hospitality market [16]. This feature promotes autonomous organizational management and supports management in decision making.

Essentially, the most utilized service points can be identified through touchpoint monitoring. This assessment allows the service team to establish closer ties with the customers and influence their perceptions about the services through optimization. The management uses information from the AI systems to customize services based on common trends to promote customer satisfaction and strategic marketing [17]. This knowledge application function of the AI system helps the organization to calculate satisfaction ratios and promote productivity. This monitoring's aftermath is increasing customer satisfaction levels and trusts that the establishments care for their personal needs. Moreover, knowledge management is critical in making crucial decisions such as producing a specific meal, closing down some sections or services, marketing, and improving customer care to fend off the competitors.

IV. CONCLUSION WITH IMPACT

Experiential tourist experiences determine an establishment's success in attaining customer loyalty and repeat business strategically with a competitive advantage. Through AI, service innovation provides complementary support to the organization to manage different systems that determined customer service access and satisfaction score. Previous studies have reported that AI and robotics in big data organizations help information management through mining, organization, synthesis, and application to facilitate different service functions. This technology supports hotels in cost-cutting, especially in labor and marketing. Additionally, it promotes customer engagement and loyalty. However, the main limitation is the possible adverse effects on service upon system failure that may cause service delay or denial. Therefore, organizations need a strategic implementation focusing on technical support through effective maintenance schedules to prevent system failure.

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