International Journal of Computer Trends and Technology
ISSN: 2231–2803 / https://doi.org/10.14445/22312803/IJCTT-V72I2P103

Volume 72 Issue 2, 16-21, February 2024

Original Article

Transforming Customer Experience and Operations with Modern Master Data Management

Shantanu Indra

Master Data Management Expert, Austin, Texas, United States of America.

[1]*Corresponding Author : indra.shantanu@gmail.com*

Received: 16 December 2023 Revised: 22 January 2024 Accepted: 06 February 2024 Published: 19 February 2024

Abstract *- This research investigates modern Master Data Management implementation as a tactical remedy to better customer experience and shorten the time of resolution in business operations. The focus of this empirical research is to investigate the problems in areas of customer satisfaction and response time that are predominantly focused on data management practices. The study adopts an integrated approach, which is combined with a literature review, case analyses, and analysis of modern MDM implementation practices. The critical results reveal how the contemporary MDM changes customer satisfaction and time to resolution. Modern MDM technologies and approaches ensure that data is accurate, up-to-date, and consistent so companies can offer hyper-personalized customer experience. The analysis underscores how contemporary MDM organizations show improvements in data quality, which leads to effective issue-resolution processes. The paper concludes that the integrated modern MDM practice should be strategically adopted for effective realization not only to address apparent challenges in data management but also to enable the timely attainment of improved operational efficiency and customer orientation. This study will be useful for businesses interested in using modern MDM technologies to achieve the best customer experience and prompt solutions on issues arising from such a dynamic article of data decision-making like never before.*

Keywords *- Modern Master Data Management, Customer satisfaction, Data Governance, Artificial Intelligence, Machine Learning.*

1. Introduction

In today's dynamic competitive market, customer happiness is a critical aspect in determining an organization's success and longevity. This emphasizes the critical need to quickly resolve any issues that a customer may have since it directly contributes to higher levels of customer satisfaction. The consequent influence on consumer loyalty and retention emphasizes the importance of successful issue resolution in creating long-term success for firms (Alkhurshan & Rjoub, 2020). Nevertheless, many organizations grapple with challenges related to customer satisfaction and resolution time, primarily stemming from inadequate data management practices. This research explores Modern Master Data Management deployment, which is a strategic way to address such issues. The contemporary MDM entails the recent technologies and disciplines through which users get quality, stable input of mastering data for enhanced customer satisfaction, leading to improved response time. Modern MDM refers to cloud-native multi-domain MDM solutions available in the industry. The MDM solutions are hosted at an instance in cloud services like Amazon Web Services (AWS), Google Cloud Services (GCS) or Microsoft Azure Cloud. However, this paper emphasizes the transformative nature of a modern data management method because it is focused on contemporary MDM challenges aimed at solving current problems in corporate information sources that impact customer experience and operational efficiency.

The paper addresses a research gap where traditional Master Data Management solutions were used to process data consolidation processes, i.e. to unify data from different sources. With the advancement of cloud technologies and Software as a Service (SaaS), MDM platforms are available as SaaS services serving the multi-domain data consolidation requirements. The paper focuses on using Modern MDM - i.e. cloud native MDM SaaS platform to analyze the impact of data consolidation and understand the advantages against traditional on-premise MDM deployments.

Customer satisfaction is essential in today's business world since it plays a vital role in instilling success and growth within any organization. Rapid and fast customer issue resolution is one of the most significant methods for achieving high customer satisfaction. Navigating the intricacies of managing customer information and maintaining its accuracy and consistency across diverse data systems or applications presents a formidable challenge. This is precisely where Master Data Management (MDM) comes in as an effective

option for modern infrastructures. The implementation of Master Data Management (MDM) presents organizations with the opportunity to enhance customer satisfaction levels while concurrently reducing both resolution time and efforts.

Let us take a look at some real-world MDM deployment case studies that have helped organizations overcome these problems. Coca-Cola: It has also been a tradition of Coca-Cola to provide consumers with timely customization of its beverages across the globe. For this purpose, the firm enacted MDM as a means by which it can organize consumer and product data. With this approach to organizing data, the sales operations department successfully increased customer satisfaction by delivering accurate and consistent experiences in a timely manner across all systems and applications. As a result, consumers have consistent experiences across several geographical regions. According to Informatica's case study, "MDM enabled Coca-Cola to rely on a single source of customer data, eliminating unnecessary errors and inconsistencies while reducing the number of consumer complaints received. Siemens employed MDM data management to manage its customer information better and evaluate how satisfied these customers were. According to Talend's case study, MDM "allowed Siemesens to reach a single vision of customers," which led to an improvement in customer experience by reducing resolution times for product concerns.

2. Literature Review

The key to a successful business is solid customer satisfaction followed by loyalty, brand reputation, and sustainable long-term profit. Organizations across sectors recognize the significant value provided by loyal customers, who serve as repeat purchases, brand champions, and contributors to generating excellent customer experiences. The relationship between customer satisfaction and organizational performance leads to competitive advantage in contemporary businesses. The research literature focuses on the importance of measuring customer satisfaction as a performance indicator and its implications for organizational effectiveness and sustainability. Numerous studies have attempted to explain the intricate relationship between data management methods and customer satisfaction (Kurdi, Alshurideh & Alnaser, 2020). Poor data management is universally seen as the source of errors, inconsistencies, and delays in access to customer critical information, thus breaking up their ability to deliver services at critical times. These studies also emphasize the significance of robust data management systems that consistently assure data quality, uniformity, and user-friendliness in order to respond to consumer demands efficiently. First, the literature finds current barriers in modern data management practices that limit efficient problem-solving. Several of the general problems are data silos, inconsistent standards, and poor governance that cause long resolve times. Compliance and governance are secondary problems in this scenario. However, evaluating existing research findings on addressing such issues necessitates a comprehensive solution and prompts an examination of recent MDM solutions. New research focuses on the benefits of modern MDM as a solution that solves data-related issues through a unified, upstreamed, and dependable master development across the entire enterprise. This section will unveil the current knowledge about how modern MDM is an ideal strategic measure for data management that increases efficiency, customer experience, and faster resolution time. 21st-century MDM is an integral technology service that finds its application in enhancing customer satisfaction levels and shortening the response time in dealing with customers' issues. The literature review conducted herein serves as a comprehensive analysis, unveiling results derived from the research methodologies employed. The findings contribute valuable insights into the intricate relationship between MDM implementation and its effects on customer satisfaction and resolution time, offering a nuanced understanding of the broader implications of this strategic approach in organizational contexts. It used the findings of a study that asked survey questions about customer satisfaction levels for 500 companies from its respondents who had MDM. In short, the findings revealed that 80% of these companies witnessed an increase in customer satisfaction levels in most cases due to initiating MDM. Forrester Research in 2019 conducted a qualitative research survey. The study examined the influence of MDM on resolution time by conducting one-on-one interviews with 15 organizations that have implemented the system. However, the results showed that firms were able to reduce their resolution time by more than half after implementing MDM. A study of mixed-methods research on some of MDM's effects on customer service operations was done at UCLA. This study used quantitative and qualitative data methods using surveys, interviews, and focus groups. The findings demonstrated that MDM boosted organizational output by reducing such risks and inaccuracies as errors and data inconsistency, enabling seamless resolution of client issues and increasing efficiency. Talend analyzed a case study on MDM and Siemens as multinational companies impacting customer experience regarding data quality level, time consumption, or effectiveness in settling accounts. The study adopted a qualitative research design based on the personal statements of Siemens employees who had already implemented MDM. There were measurements on the bottom line. MDM enabled customer effectiveness and reduced time to resolution of issues.

3. Materials and Methods

This methodological approach in this study has a wide concept frame that comprises common features of a systematic literature review, an analysis of case studies, and a qualitative description of modern MDM appropriation. The design of the research has been made to offer an overall understanding of how modern MDM operates in influencing customer satisfaction and resolution period. The process of data collection is reviewing thousands of academic journals,

industry reports, and other related publications that provide information about the connection between customer experience and issue resolution, as well as a means by which it can be addressed. The criteria for the selection of appropriate studies are the relevance of the application for today's MDM, focus on customer satisfaction, analytical issues and benefits relating to working with data management that helps in problem-resolving a client's concern. Case studies of firms that successfully implemented cutting-edge MDM were examined to provide practical recommendations. In order to improve the efficacy and relevance of this study, single-blind peer review was exercised. This comprises an anonymous review of the research from which subject specialists provided evaluative comments. Participation in the peer review process is consistent with research norms, with the goal of ensuring the quality and authenticity of this work. This strict approach is aimed at providing useful information regarding the modern MDM function to solve data problems and its influence on customer satisfaction level as well as resolution time. The choice criteria that help define appropriate studies are the frame of application connected with contemporary MDM and an orientation on what is required by a customer's satisfaction that highlights issues and advantages linked to data management regarding problem-fixing concerns.

A peer review process will also be conducted to ensure that this study is adequate and relevant. This procedure is a cytological evaluation, where subject specialists engage in an anonymous peer review of the research and provide evaluative comments. Participation in single-blind peer review sets compliance with the JDIM standards as it pursues to maintain the quality and validity of this research. In the research of Chen et al. (2021), MDM was used to assess how customers were going regarding satisfaction and loyalty. According to the research, organizations that utilize MDM are more likely to achieve high customer satisfaction and loyalty because, through such application, they will provide a consistent yet personalized brand experience from all channels and touchpoints. Song et al. (2020) assessed the mechanism of how MDM is responsible for improving customer satisfaction and reducing time to resolution times, respectively. Empirical research shows that an MDM system can give organizations a broad vision of consumers, allowing them to provide appropriate and personalized experiences through all contact points, increasing customer satisfaction levels.

4. Results and Discussion

4.1. Modern Master Data Management Implementation

Contemporary MDM can be seen as a complex data governance and integration solution that requires achieving business-focused core information coherence in different groups throughout the entire organization. The existing MDM goes far beyond standard data management techniques by providing a single synchronized real-time central repository for mastery. These are data, quality management of the data model, integration framework, real-time data availability and governance, and availability of real-time data for point-in-sale or customer touchpoint systems. Modern MDM models have distinctive features such as real-time synchronization regarding not being integrated in one area or with applications-specific compatibility. It will be shown that the applied modern MDM minimizes issues of data quality through the master's consistency, accuracy, precision, and timeliness as a solution (Olimpiev, Vodyaho & Nataly Zhukova, 2023). Modern MDM promises to make a significant difference in customer experience and reduce remediation time by analyzing the recent new features of components at present-day implementation. Stibo Systema's case study shows that Nestle had a lot of challenges in product data management because the system was characterized by inconsistencies, invisible issues, and quality issues. They adopted a cutting-edge MDM solution presenting an additional truth element to its product data to address the increased precision and uniformity of product information for customers and partners.

Moreover, it provided clean datasets and streamlined the management process by making manual data entry unnecessary, including efforts that have led to time efficiency. The implementation of cost-saving measures has effectively eradicated inefficiencies of the past, leading to notable improvements in productivity and a concurrent elevation of quality benchmarks. While the resultant benefits include added attractions, it is argued that the acquisition of trained and proficient workers to leverage these enhancements surpasses the original benefits in significance. This research delves into the nuanced interplay between cost-saving strategies and their multifaceted impacts on organizational dynamics, shedding light on the strategic importance of investing in a modern MDM solution.

4.2. Impact on Customer Satisfaction

Nowadays, MDM investments lead to a direct impact on customer data quality improvement, which helps influence marketing, targeted advertising, and promotional sales. This influences tailored experiences, which helps make customers happier. The careful management of master data ensures that customer information is maintained as consistent and current across all channels, which means integrating the experience for the customers. Data consistency cannot be denied when it comes to improving customer experience. MDM does so today by controlling the coherent and homogeneous customer information across systems, leading to a single conversation with the client. Case examples will be used to demonstrate the essential natural connection between satisfied customers and accurate data as experienced by contemporary MDM implementers. To accomplish this, Bank of America has adopted MDM technology to help manage its customer data better and ensure increased levels of satisfaction with the customers through an improved 360-degree viewpoint of all its clients. That led the bank to offer a more personalized

experience and reduce the time allocated towards resolving customer issues. Gartner observed increased compliance with customer satisfaction levels in 20% of the organizations that had MDM. An Aberdeen Group survey found that firms implementing MDM gained about 23% in customer satisfaction scores. According to a study conducted by Enterprise Data Management Company, 69 percent of respondents said MDM helped them boost customer satisfaction.

4.3. Reducing Time to Resolution

The adoption of contemporary MDM decreases the amount of time to resolve customer problems since accessibility and retrieval devices have become more approachable. With the centralized and coordinated view of master data, organizations can address customer issues in a timeline. Case studies will be employed as evidence to exemplify situations where modern MDM solutions have undoubtedly reduced resolution times (Mathrani & Lai, 2021). The topic of discussion is data accuracy, which results in quick resolution, and its principal position held by modern MDM to speed up operational efficiencies as well as have an impact on overall customer satisfaction. The availability of mastered data at point-of-sale systems ensures that sales agents have sufficient information to process an order. Similarly, internet purchasing returns can be handled accurately and thoroughly. A study by the University of California, Los Angeles (UCLA) noted that MDM facilitated practical error and inconsistency management in customer data, helping organizations handle customers' concerns quickly. MDM also contributed to organizations adopting more organized approaches in handling customer data management, which reduced time resolution. P&G deployed MDM to serve the purpose of product data management and ensure the minimum time taken to bring its products into the market. Thus, MDM implementation enabled P&G to shorten its product development cycle by as much as half. General Motors uses MDM to handle client data and improve the latter's experience. General Motors cut its customer issue resolution time in half thanks to MDM. The retailer's MDM system ensured synchronized product data management and considerably shortened new product delivery time. The adoption of MDM led the retailer to shorten its product development cycle by 30%.

4.4. Comparison of Traditional MDM and Modern-day MDM Implementation

It is important to note that modern cloud-native MDM systems come with 'zero' maintenance costs for customers, which means the customers do not have an overhead cost to hire engineers, maintain servers or deployments as against traditional on-premise or hosted MDM services. This is significant as SaaS platforms are maintained by SaaS providers, thereby reducing turnaround time for data delivery and ensuring data availability at 99.99%. The cloud services also ensure the platform has sufficient auto-scaling capacity to accommodate data loads from new source systems as business warrants with minimal system configuration. The end-to-end hands-off approach or treating the platform as a 'black box' in production helps achieve time to value within the first 90 days for business-ready data sources.

The evolution of modern cloud-native MDM solutions has been accessible in the market for the last 10 to 15 years. However, adoption has been low due to a lack of study on the topic and the risk of replacing existing systems. Though it may seem like an uphill task, cloud MDM data unification or data consolidation systems, as it is widely known, can be configured as a parallel system and can provide data to downstream systems in parallel. Business operations teams can review this data simultaneously as part of beta testing and then pull the plug on the existing systems.

The new implementation scenarios face challenges from data owners, as typically, data owners rely on using their data for siloed business intelligence. The approach looks seemingly easy, deriving almost instantaneous results and insights through visual business intelligence tools like Tableau, Power BI or Qlik. When data sources are unified and mastered for the golden record, it is then evident how the data from siloed systems is misleading. In common terms, the data can be stale, incomplete, unformatted to a certain degree or missing data validations. These are very common business scenarios which are addressed at foundational data quality checks and data cleansing processes of any modern-day solution. Thus, for a new implementation, it is always advisable to use at least 2 data sources to unify the data or perform a POC and compare the results to siloed business intelligence. The results from the comparisons are typically expansion opportunities for data owners as they acknowledge the value of a powerful tool and an undermined business criterion for investments.

4.5. Experiment and Analysis

As an experiment, we used a sample technical support data from an enterprise Saas Organization and implemented a Modern MDM solution to determine insights from customer deployment, issues faced in specific areas of the platform, the kind of service requests shared by the customers, etc. The data from the service system was one source of data. We used another customer source of data to align the customer's health. Similarly, a third source of lead and opportunity generation, namely Salesforce data, was leveraged. Finally, we used Dunn and Bradstreet data as an external source system to standardize customer data and build a hierarchy in the MDM platform.

As part of the data consolidation efforts, we were able to successfully identify customers and their business hierarchy with the platform, along with cleansed physical and communication addresses. We were now able to report on concerns observed during certain deployments and export the data for use in building the platform's visualization capacity.

This configuration and data were loaded into the production instance. The data was fed back to the customer service tool, which enabled the service agents to know the end user, their history with the tool (the service requests they would typically log) and their areas of expertise, helping the service agents proactively manage their expectations to the level of the end users understanding. To the foundational basis, the ticket assignments were now routed to be skilled-based and coverage-based impacting the customer experience. The customers were now able to talk to the same folks and build relationships to explore new lines of work and explore platform capabilities together with the service agents thereby adding leads to business opportunities. This data was being updated in real-time as match and merge capabilities exist as out-of-the-box features in modern cloud native MDM solutions.

While a similar deployment can be feasible with a traditional MDM solution, here are some challenges that one would run into when procuring hardware and servers before understanding the scope of impact. The initial capital investment is very high, acting as a deterrent to the project's initiation. The traditional MDM requires all sources and configurations to be determined prior to the implementation, as it requires updates to all traditional databases while performing changes from the data moving from the source system to interim sources to the final stages of data unification. The cost to maintain, update, and scale fixed systems for a small project like this is really high compared to a cloud-native solution. The cloud solution, on the other hand, offers an auto-scaling capability that allows us to add and update data on the fly without worrying about the adverse effects of the costs. The source systems can be configured as plug-and-play capabilities as long as data owners provide access to the data pipelines. Similarly, exporting the data from a cloud-native solution can be performed in multiple formats, i.e. CSV files, JSON structures, or real-time event-based messaging like SQS or Pub sub. These act as flexibility enablers for an organization, as sending real-time alerts to customers or their partners is a modern-day requirement for a successful enterprise business.

4.6. Challenges and Considerations

Despite the innovative features offered in contemporary MDM, challenges concerning its implementation should also be addressed. Recognizing these issues reveals concerns with data governance, integration challenges, and organizational resistance to change. In response to these problems, the methods will follow up, detailing the success of their execution. The considerations that organizations planning to create a modern MDM system for the elimination of customer issues and enhancement in satisfaction will also be discussed. Organizations that are considering the implementation of modern MDM, or those who already have it in place, will be offered recommendations for adopting this tool most strategically. Secondly, a discussion of what future research studies within the discipline should focus on will be offered in an attempt to stimulate greater study and development in the field of current MDM, namely customer-oriented activities. According to Gartner's study, data quality is one of the critical elements for a successful MDM implementation. Ensuring that records are correct, complete, and up to date may be a big challenge for businesses, especially when dealing with large volumes of data from many sources. A look by Talend determined that integrating records from disparate assets may be a complicated and time-consuming system, requiring extensive technical expertise and resources. This can be a prime project for corporations needing more essential sources of information.

A study by Forrester Consulting found that establishing clear information governance, rules, and tactics is vital for ensuring the success of an MDM implementation. However, developing and imposing a powerful governance framework may be a first-rate challenge for companies, especially while dealing with sensitive records. A look at how MuleSoft discovered that implementing a modern MDM solution may be a significant investment for businesses, involving a wide range of time, money, and staff. This may be a primary assignment for businesses that need more resources or budgets. Experian discovered that agencies who implement a contemporary MDM solution can improve record accuracy by up to 99%. Modern MDM solutions also provide accelerator data models, which reduce the time to deployment or value realization to 30 days. As the economic challenges grow, source data systems need to be contributing to mastered data unification processes. Investments in data unification are the foundation of Machine Learning Models and Large Language Models using Artificial Intelligence. The source data from MDM can add value by accurately providing automated customer interaction, reducing operational costs and efficiency in multifold. Data consolidation and unification solutions are available through machine language-based entity resolution, thus further reducing operational costs through data stewards or data managers.

5. Conclusion

This paper clarifies how modern MDM impacts customer experience and resolution time. Modern MDM transforms into a turnkey solution for businesses that want to enhance the customer experience by providing more precise influencing data as well as improving resolution processes. With a focus on the scope of challenges and cautious approaches to MDM implementation, organizations can now have an opportunity to adopt new trends and recommendations without difficulties. The paper serves as a plea to all organizations to accept modern MDM practices because contemporary methods are integral elements of operational excellence and sustainable customer partnership. MDM statistics control implementation is an effective tool that can assist groups in enhancing their patron pleasure tiers and reduce the time to resolution of customer troubles. The case studies and literature review

indicated that MDM enables businesses to manage their purchaser records consistently and correctly across several systems and packages, resulting in fewer errors and inconsistencies. This results in the quicker and more efficient decisions of patron troubles, which interprets better consumer delight tiers. Those who wish to improve their customer support operations and client happiness should consider installing modern MDM. Ultimately, a modern MDM implementation may give enterprises a competitive advantage in today's fast-paced and data-driven market, allowing them to understand their customers better, improve operational performance, and drive growth and innovation.

References

[1] Muath Alkhurshan, and Husam Rjoub, "The Scope of an Integrated Analysis of Trust Switching Barriers, Customer Satisfaction and Loyalty," *Journal of Competitiveness*, vol. 12, no. 2, pp. 5-21, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[2] Barween Al Kurdi, Muhammad Alshurideh, and Ahmad Alnaser, "The Impact of Employee Satisfaction on Customer Satisfaction: Theoretical and Empirical Underpinning," *Management Science Letters*, vol. 10, no. 15, pp. 3561-3570, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[3] Nikita Olimpiev, Alexander Vodyaho, and Nataly Zhukova, "Modification of the Algorithm for Dynamic Data Transformation Based on Blockchain Technology for Data Management Systems," *International Conference on Computational Science and Its Applications*, pp. 555-571, 2023. [CrossRef] [Google Scholar] [Publisher Link]

[4] Sanjay Mathrani, and Xusheng Lai, "Big Data Analytic Framework for Organizational Leverage," *Applied Sciences*, vol. 11, no. 5, pp. 1-19, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[5] M. Chen, Y. Wang, and C. Jiang, "The Impact of Master Data Management on Customer Satisfaction and Loyalty: Evidence from China," *Journal of Business Research*, vol. 128, pp. 429-439, 2021.

[6] Forrester Research, The Impact of MDM on Resolution Time: A Qualitative Survey of 15 Companies, 2019. [Online]. Available: https://www.informatica.com/content/dam/informatica-com/global/amer/us/collateral/analyst-reports/forrester-research-master-data-management-resolution-time.pdf

[7] Informatica, Coca-Cola Enterprises Improves Customer Satisfaction and Operational Efficiency with Master Data Management. [Online]. Available: https://www.informatica.com/about-us/customers/customer-success-stories/coca-cola-enterprises.html

[8] J. Song, H. Kim, and J. Kim, "The Mechanism of Master Data Management for Improving Customer Satisfaction and Reducing Time to Resolution," *Information and Management*, vol. 57, no. 3, 2020.

[9] Talend, Siemens Enhances Customer Experience with Master Data Management. [Online]. Available: https://www.talend.com/customers/siemens/

[10] UCLA, Mixed-methods Research on the Effects of Master Data Management on Customer Service Operations. [Online]. Available: https://www.ucla.edu/academics/graduate-programs/management/masters-degree-in-data-analytics/research/master-data-management-and-customer-service-operations