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Optimization of SME Marketing Strategies through Digital Data-Based Customer Profitability Analysis: A Case Study of SMEs in the Former Surakarta Residency

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Abstract. This study explores the potential of digital data-based customer profitability analysis in optimizing marketing strategies for Small and Medium Enterprises (SMEs) in the former Surakarta Residency, Indonesia. Using a mixed-method approach, including semi-structured interviews with 15 SME owners/managers, direct observations, document analysis, and an online survey of 250 customers, the research investigates the current state of digital data adoption, challenges in implementation, and the impact of customer profitability analysis on marketing effectiveness. The study employs RFM (Recency, Frequency, Monetary) analysis for customer segmentation and calculates Customer Lifetime Value (CLV) to identify key profitability drivers. Findings reveal limited awareness and implementation of digital data-based customer profitability analysis among SMEs, primarily due to resource constraints and technical expertise limitations. The research identifies four customer segments, with 15% (Platinum customers) contributing significantly to profitability. Purchase frequency and average transaction value emerge as primary profitability drivers. The study concludes that while digital data-based customer profitability analysis offers significant potential for optimizing SME marketing strategies, realizing this potential requires collaborative efforts from SME stakeholders, policymakers, and support institutions to address implementation challenges and build a supportive ecosystem for data-driven marketing practices.

Keywords: Small and Medium Enterprises; Digital Marketing; Customer Profitability Analysis; Customer Lifetime Value; Marketing Strategy Optimization

1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) play a vital role in Indonesia's economy, including in the former Surakarta Residency area (Khan et al., 2024). According

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to data from the Ministry of Cooperatives and SMEs, MSMEs contribute approximately 60% of the national GDP and absorb more than 97% of the workforce in Indonesia (Becker et al., 2021). However, in an increasingly competitive digital era, MSMEs face significant challenges in optimizing their marketing strategies to remain relevant and profitable (Calandra et al., 2024).

The development of digital technology has significantly transformed the marketing landscape, providing access to richer and more detailed customer data (Kumar et al., 2021). Data-driven customer profitability analysis offers MSMEs opportunities to understand the value of each customer more accurately, allowing for more efficient and effective allocation of marketing resources (Kemenkop, 2021).

Despite its great potential, the adoption of digital data analysis among MSMEs is still relatively low, especially in areas outside the main economic centers such as the former Surakarta Residency (Dina & Dewaranu, 2022). Limited understanding, resources, and technical expertise are often the main obstacles for MSMEs in utilizing digital data for customer profitability analysis (Utami & Nuvriasari, 2023).

This study aims to explore how MSMEs in the former Surakarta (Mizukoshi, 2023) Residency can optimize their marketing strategies through data-driven customer profitability analysis (Mancuso et al., 2023). By focusing on case studies in this region, this research will identify best practices, challenges, and opportunities in the application of digital customer profitability analysis among local MSMEs. The results of this study can provide valuable insights for MSMEs, policymakers, and other stakeholders in efforts to enhance the competitiveness of MSMEs through the utilization of digital data for better marketing decision-making.

In the rapidly evolving business landscape of the 21st century, small and medium-sized enterprises (SMEs) face unique challenges and opportunities (Budi Laksana et al., 2022). The advent of digital technologies has revolutionized how businesses operate, market, and engage with customers (Eko Waluyo et al., 2022). This transformation has been particularly significant for SMEs, which often lack the extensive resources and brand recognition of larger corporations (Hodgkinson et al., 2022). However, these smaller enterprises possess agility and the ability to rapidly adapt, which can be leveraged through strategic use of digital data. One critical area where digital data can significantly impact SMEs is in the realm of marketing strategy (Prasetya et al., 2022). Effective marketing is essential for SMEs to compete, grow, and sustain themselves in competitive markets (Getnet Agazu et al., 2022). Traditional marketing methods, while still valuable, are increasingly being supplemented or replaced by digital marketing techniques. The digital age has brought with it an abundance of data, offering insights into consumer behavior, preferences, and profitability. For SMEs, harnessing this data can be a game-changer, enabling them to make informed decisions, optimize their marketing strategies, and allocate resources more efficiently.

Customer profitability analysis is a crucial component of this data-driven approach. This analytical method involves assessing the profitability of individual customers or segments, allowing businesses to identify which customers are most valuable. By focusing marketing efforts on retaining profitable customers and acquiring similar new ones, SMEs can improve their overall financial performance. This approach not only enhances marketing efficiency but also fosters better customer relationships, as businesses can tailor their strategies to meet the specific needs and preferences of their most valuable customers.



In the context of SMEs operating in the Former Surakarta Residency, an area rich in cultural heritage and diverse economic activities, the importance of adopting advanced marketing strategies is particularly pronounced. This region, which includes cities such as Surakarta (Solo), Klaten, Boyolali, and Sukoharjo, has a dynamic SME sector that contributes significantly to the local economy. These businesses range from traditional crafts and textiles to modern services and manufacturing, each with its unique market dynamics and customer base.

The digital transformation offers SMEs in this region an unprecedented opportunity to enhance their competitiveness. By leveraging digital data for customer profitability analysis, these businesses can gain insights into their market segments, optimize their marketing expenditures, and ultimately increase their profitability. The case of SMEs in the Former Surakarta Residency provides a compelling example of how traditional business practices can be integrated with modern digital strategies to achieve sustainable growth. Despite the clear benefits, the adoption of digital data analytics in SME marketing strategies is not without challenges. Many SMEs may lack the technical expertise or resources to effectively collect, analyze, and utilize data. Moreover, there is often a knowledge gap regarding how to interpret data and translate insights into actionable strategies. These challenges necessitate targeted interventions, such as training programs, advisory services, and access to affordable data analytics tools, to empower SMEs to fully capitalize on digital opportunities.

The landscape of digital marketing and data analytics is continually evolving, with new tools, platforms, and methodologies emerging regularly. This dynamic environment requires SMEs to be adaptable and continuously update their knowledge and skills. For SMEs in the Former Surakarta Residency, keeping pace with these changes is crucial not only for local competitiveness but also for exploring opportunities in broader national and international markets. The role of local and regional governments, industry associations, and educational institutions is critical in supporting SMEs through this digital transition. Initiatives that provide training, resources, and networking opportunities can help bridge the gap between traditional business practices and modern digital strategies. By fostering a supportive ecosystem, these stakeholders can help SMEs in the Former Surakarta Residency—and similar regions—maximize the benefits of digital data analytics for marketing and business development.

The optimization of SME marketing strategies through digital data-based customer profitability analysis represents a significant opportunity for small and medium-sized enterprises, particularly in regions like the Former Surakarta Residency. By embracing digital tools and methodologies, SMEs can enhance their marketing efficiency, better understand their customer base, and improve overall profitability. However, the successful implementation of these strategies requires overcoming challenges related to skills, resources, and knowledge. With the right support and resources, SMEs can navigate these challenges and leverage digital data to achieve sustainable growth and competitive advantage in an increasingly digital world.

2. Methods

This research utilizes a qualitative case study approach combined with a mixed-method framework to investigate the implementation of data-driven customer profitability analysis in MSMEs (Micro, Small, and Medium Enterprises) within the former Surakarta Residency region (Braun & Clarke, 2022). By focusing on this specific



geographical area, the study aims to provide a comprehensive understanding of how MSMEs from different sectors—such as manufacturing, services, and retail—apply customer profitability analysis to their operations (Oktora *et al.*, 2022). A multiple case study design was adopted to allow for an in-depth examination and comparison across different cases (Hasyimi & Azizalrahman, 2021). Five MSMEs were selected as subjects, providing a diverse representation of the various sectors in the former Surakarta Residency (Wahyuni *et al.*, 2021). This selection was intended to enrich the study's insights into the unique challenges and strategies employed by these businesses (Kumar *et al.*, 2021).

Data collection was conducted through several methods to ensure a thorough analysis (Becker *et al.*, 2021). This included semi-structured interviews with MSME owners or managers, direct observations of their marketing processes, and the collection of customer data (Najib *et al.*, 2020). Additionally, document analysis was performed on sales reports and digital customer data (Triono *et al.*, 2020). Online surveys were also distributed to a sample of 250 customers of these MSMEs to gather quantitative data (Dirgiatmo *et al.*, 2020).

The collected data were analyzed using both qualitative and quantitative techniques. The qualitative data underwent thematic analysis using NVivo 14 software, allowing the identification of key themes and patterns. Quantitative data were analyzed using descriptive statistical methods with SPSS 28, which included calculating measures such as mean, median, mode, and standard deviation. Moreover, Customer Lifetime Value (CLV) analysis was performed using the RFM (Recency, Frequency, Monetary) model. This model calculates CLV based on the recency of transactions, the frequency of transactions, and the monetary value of transactions. An RFM score was derived to quantify customer value, and further analysis included assessing customer profitability, retention rates, and the ratio of Customer Lifetime Value to Customer Acquisition Cost. To ensure the validity and reliability of the research findings, data and method triangulation were employed. This included member checking with participants to confirm the accuracy of data interpretations (Merriam & Tisdell, 2022). Additionally, ethical considerations were strictly adhered to, with ethical approval obtained from the university's ethics committee, and informed consent secured from all participants. Data confidentiality was maintained through the use of pseudonyms and secure data storage practices.

The study also applied the Customer Profitability Analysis (CPA) framework to segment customers based on profitability, identify key drivers of profitability, and develop marketing strategies aligned with profitability insights. However, the research is limited in its scope to MSMEs within the former Surakarta Residency and may not be generalizable to other regions or larger enterprises. The analysis was further constrained by limited access to detailed financial data from the participating MSMEs, which could affect the comprehensiveness of the profitability analysis.

3. Results and Discussion

The study examined five MSMEs from the former Surakarta Residency region, representing a range of sectors including two from manufacturing (batik and furniture), two from services (travel and catering), and one from retail (a souvenir shop). These MSMEs varied in size, with employee counts ranging from 5 to 50 and annual turnovers between IDR 300 million and IDR 2.5 billion. This diversity provided a rich dataset for exploring customer profitability analysis within different business contexts.



3.1. Thematic Analysis (Qualitative Data)

The qualitative data gathered from interviews and observations uncovered several significant themes concerning the awareness and application of customer profitability analysis among MSMEs (Micro, Small, and Medium Enterprises). One of the primary findings was a limited awareness among MSME owners and managers about the concept of customer profitability analysis. Many participants were unfamiliar with this analytical approach, which suggests a broader lack of engagement with advanced business analytics within this sector. This gap in knowledge is crucial because understanding customer profitability can enable businesses to allocate resources more efficiently and tailor their services to the most profitable customer segments. The limited awareness indicates a potential area for growth and education, as increasing familiarity with such concepts could significantly enhance business performance.

Another major theme identified was the limited resources available for digital data analysis. Many MSMEs reported insufficient financial and technical resources to invest in and implement advanced data analytics tools. This limitation is a significant barrier to adopting data-driven strategies, which are increasingly necessary in the competitive market landscape. The lack of investment in technology and training means that these businesses may struggle to keep up with competitors who can leverage data for strategic decision-making. Addressing this resource gap is essential for enabling MSMEs to harness the power of data analytics effectively. The interviews also revealed a strong demand for training and technical support among MSME owners and managers. Participants expressed a clear need for educational programs and resources that could help them understand and apply data analysis tools and methodologies. This need presents an opportunity for government agencies, educational institutions, and private organizations to provide targeted training programs and technical assistance. Such support would not only help MSMEs to develop the necessary skills but also foster a culture of continuous learning and innovation within the sector.

Lastly, concerns about customer data privacy emerged as a notable theme. MSME owners and managers voiced apprehensions regarding the security and privacy of customer data, reflecting a broader global concern over data protection. This issue is particularly relevant in the context of increasing regulatory frameworks around data privacy, such as the General Data Protection Regulation (GDPR) in Europe and similar laws emerging in other regions. The emphasis on data protection highlights the need for MSMEs to develop transparent data handling policies and practices. Ensuring the privacy and security of customer information is not only a legal requirement but also a critical factor in maintaining customer trust and business reputation.

These findings illustrate the challenges and opportunities faced by MSMEs in the realm of digital data analysis and customer profitability assessment. Addressing these issues through education, resource allocation, and policy development can help MSMEs to better navigate the complexities of modern business environments and enhance their overall competitiveness.

3.2. Descriptive Statistical Analysis (Quantitative Data)

The quantitative analysis conducted provided valuable insights into customer behavior and business performance among MSMEs, highlighting several key metrics, one important metric was Customer Lifetime Value (CLV), which averaged IDR 5,200,000



across the surveyed MSMEs. The median CLV was lower, at IDR 3,800,000, with a standard deviation of IDR 2,100,000. This range indicates significant variability in the value derived from different customers, reflecting differences in customer spending habits and engagement levels. A higher standard deviation suggests that while some customers contribute substantially to revenue, others may provide much less, underscoring the importance of identifying and nurturing high-value customers.

Another key finding was related to the RFM score, a measure combining recency, frequency, and monetary value of customer purchases to assess engagement and loyalty. The average RFM score across the MSMEs was 3.2 out of 5, with the most frequently occurring score (mode) being 3. This moderate score indicates a middling level of customer engagement and loyalty, suggesting room for improvement in how these businesses engage with their customers. Enhancing customer relationship management strategies could help increase these scores, leading to better customer retention and increased sales. Customer retention rate was another critical metric analyzed, revealing an average retention rate of 68%. However, there was considerable variation across different sectors, with travel-related MSMEs achieving the highest retention rate at 82% and retail MSMEs the lowest at 52%. These figures indicate differing levels of customer loyalty and satisfaction, possibly influenced by the nature of the products or services offered, customer service quality, and competitive pressures. Higher retention rates generally correlate with better business stability and profitability, highlighting the importance of strategies focused on retaining existing customers.

Table 1 Summary of Key Metrics from Quantitative Analysis

Metric	Value
Customer Lifetime Value (CLV)	<ul style="list-style-type: none"> • Average: IDR 5,200,000 • Median: IDR 3,800,000 • Standard Deviation: IDR 2,100,000
RFM Score	<ul style="list-style-type: none"> • Average: 3.2 • Mode: 3
Customer Retention Rate	<ul style="list-style-type: none"> • Average: 68% • Highest: 82% (Travel) • Lowest: 52% (Retail)
Customer Acquisition Cost (CAC)	<ul style="list-style-type: none"> • Average: IDR 450,000 • Range: IDR 250,000 (Batik) to IDR 750,000 (Travel)

Lastly, the analysis of Customer Acquisition Cost (CAC) showed an average of IDR 450,000 per new customer, with costs ranging from IDR 250,000 in batik manufacturing to IDR 750,000 in travel services. This variation in CAC across industries reflects differences in marketing strategies and the efficiency of these efforts. Industries with lower CAC, like batik manufacturing, may be benefiting from more cost-effective marketing channels or less competitive markets. In contrast, higher CACs, such as those in travel services, may indicate a more challenging acquisition environment, requiring more



investment to attract new customers. Overall, these quantitative insights provide a comprehensive view of how MSMEs are performing in terms of customer engagement, retention, and acquisition costs. Understanding these metrics helps businesses to strategize better, focusing on retaining valuable customers, improving engagement, and optimizing marketing investments to enhance overall profitability and growth.

3.3. Customer Segmentation Based on RFM Analysis

The analysis of customer segmentation based on RFM (Recency, Frequency, Monetary) analysis revealed four distinct groups, each with unique characteristics and implications for business strategy. The first group, Platinum Customers, comprises 15% of the customer base. These individuals are considered high-value due to their frequent transactions and substantial spending. They are a critical segment for any business, as they contribute significantly to overall profitability. Businesses can benefit from focusing on retaining and nurturing this segment through personalized services and loyalty programs, ensuring that these valuable customers remain engaged and continue to contribute positively to the company's bottom line.

The second segment identified is the Potential Customers, accounting for 30% of the customer base. These customers exhibit a medium level of lifetime value (CLV) and transaction frequency, indicating that while they are not currently the most profitable, they have the potential to become so. With targeted marketing efforts, such as special offers or personalized communication, businesses can encourage these customers to increase their spending and frequency of purchases, thereby moving them into the higher-value category. Dormant Customers make up 40% of the customer base, representing the largest segment. These customers are characterized by low CLV and infrequent transactions, suggesting a lack of engagement with the business. This group presents a significant opportunity for reactivation strategies. By identifying the reasons behind their inactivity, such as shifts in preferences or dissatisfaction with the product or service, businesses can develop targeted campaigns to re-engage these customers. This might involve offering incentives, re-establishing contact through personalized communications, or addressing any specific concerns they may have.

Finally, the At-Risk Customers segment constitutes 15% of the customer base. This group is marked by very low CLV and transaction frequency, signaling a high likelihood of churn if not promptly addressed. These customers are at risk of being lost entirely to the business if proactive measures are not taken. Strategies to retain at-risk customers might include personalized outreach, special offers, or loyalty rewards designed to rekindle their interest and engagement with the brand. Understanding these customer segments allows businesses to tailor their marketing and engagement strategies effectively, maximizing retention and profitability. By focusing resources on high-value customers, nurturing potential customers, reactivating dormant customers, and attempting to save at-risk customers, businesses can develop a more robust and effective customer relationship management strategy.

3.4. Key Drivers of Customer Profitability

The study highlighted several key drivers of customer profitability, crucial for understanding and optimizing business strategies. The most influential factor was purchase frequency, with a correlation coefficient of 0.78. This strong positive correlation with Customer Lifetime Value (CLV) suggests that customers who purchase more



frequently are significantly more valuable to businesses. Increasing purchase frequency can therefore be a primary focus for businesses looking to enhance profitability. Strategies such as loyalty programs, personalized offers, and regular engagement can encourage more frequent purchases. Average transaction value also emerged as a significant factor, showing a moderate positive correlation with CLV ($r = 0.62$). This indicates that customers who spend more per transaction contribute more to overall profitability. Businesses can leverage this insight by upselling, cross-selling, or offering premium products and services that encourage higher spending per visit.

The length of the customer relationship showed a weaker, yet still positive correlation with CLV ($r = 0.45$). This relationship suggests that the duration over which a customer remains engaged with a business also contributes to their overall value. While less impactful than purchase frequency and transaction value, maintaining long-term customer relationships is still beneficial, potentially leading to more consistent revenue streams. Strategies to strengthen customer loyalty and satisfaction can help in extending the length of these relationships. The analysis of the LTV:CAC (Lifetime Value to Customer Acquisition Cost) ratio revealed an average of 11.5:1 across the MSMEs studied. This ratio indicates that, on average, the revenue generated from customers significantly outweighs the costs of acquiring them, which is a positive sign of business efficiency and profitability. However, there was considerable variation across different sectors. For instance, the catering services sector had the highest ratio at 15.2:1, suggesting particularly efficient customer acquisition and high profitability in this area. In contrast, the retail sector had a lower ratio of 8.3:1, pointing to higher relative costs of customer acquisition or lower revenue per customer.

These findings underscore the importance of sector-specific strategies in optimizing the balance between acquisition costs and customer value. Businesses in sectors with lower LTV:CAC ratios may need to reevaluate their marketing and customer acquisition strategies, focusing on reducing costs or increasing customer value to improve profitability. Conversely, those with higher ratios might explore ways to further enhance customer lifetime value, leveraging their already strong position. Purchase frequency, average transaction value, and the length of the customer relationship are key drivers of customer profitability. The LTV:CAC ratio provides a critical measure of efficiency in customer acquisition and retention. Understanding and optimizing these factors can help businesses develop more targeted and effective strategies to enhance overall profitability and growth.

3.5. Optimizing MSME Profitability through Customer Analytics

The discussion underscores the crucial role of customer profitability analysis in the competitive landscape of MSMEs (Micro, Small, and Medium Enterprises). However, a significant gap in the awareness and implementation of these analytical tools among Indonesian MSMEs is evident. This gap aligns with previous studies that highlight low adoption rates of digital data analysis tools in this sector. The primary barriers include a lack of resources and technical expertise, indicating a pressing need for targeted training programs and support from both governmental and industry bodies. Such initiatives are essential to foster digital literacy and build analytical capabilities among these businesses. Customer segmentation using RFM (Recency, Frequency, Monetary) analysis has revealed that a small percentage of customers (Platinum segment) significantly contribute to business value, affirming the Pareto principle. This finding emphasizes the importance of



developing targeted retention strategies, such as loyalty programs, specifically designed for high-value customers. Additionally, businesses can enhance their performance by implementing reactivation campaigns for dormant customers, thereby maximizing engagement across different customer segments. Tailoring marketing efforts to these distinct groups can substantially improve business outcomes.

The study's examination of Customer Lifetime Value (CLV) and Customer Acquisition Cost (CAC) ratios shows that, overall, the MSMEs maintain a healthy balance, which indicates efficient business models. However, sector-specific variations suggest that certain industries, particularly retail, could enhance profitability by refining their customer acquisition strategies or by increasing the value offered to customers. This could involve leveraging more effective marketing techniques or introducing new product offerings that align better with customer needs. The analysis highlights purchase frequency as the most significant driver of customer profitability. This suggests that businesses should focus on strategies to increase transaction frequency, such as through cross-selling and up-selling initiatives. Moreover, efforts to enhance the average transaction value, possibly through product bundling or the introduction of premium services, could further boost profitability. These strategies are crucial for MSMEs looking to strengthen their market position.

Concerns about customer data privacy emerged as a significant issue, reflecting broader societal concerns about data protection. For MSMEs, developing and implementing robust privacy policies is essential not only for legal compliance but also for maintaining and building customer trust. Transparent data handling practices are becoming increasingly important in fostering a trustworthy business environment, which is vital for long-term customer loyalty. Practical steps for MSMEs include investing in training and technology to enhance data analysis skills, which would enable a better understanding and service of customer needs. Developing personalized marketing strategies based on insights from RFM segmentation can make marketing efforts more effective. Additionally, focusing on increasing purchase frequency and average transaction value should be central to marketing and sales strategies. Implementing loyalty programs can help retain high-value customers, ensuring sustained business growth. Lastly, establishing clear and robust data privacy policies will address customer concerns and enhance trust.

While the study provides valuable insights into customer profitability analysis among MSMEs in the former Surakarta Residency, its limitations, such as a small sample size and geographic focus, suggest the need for further research. Expanding the scope to include a larger and more diverse sample across different regions and sectors would help validate these findings and offer a more comprehensive understanding of the factors influencing customer profitability in MSMEs.

4. Conclusions

The implementation of data-driven customer profitability analysis among MSMEs in the former Surakarta Residency remains limited, but it holds substantial potential for optimizing marketing strategies. The primary barriers to wider adoption are resource constraints, a lack of technical expertise, and concerns over data privacy. Despite these challenges, RFM (Recency, Frequency, Monetary) analysis has proven effective in segmenting customers, revealing that approximately 15% of customers (the Platinum



segment) significantly contribute to profitability. This finding emphasizes the need for targeted marketing strategies and personalized customer retention programs.

The study identified purchase frequency and average transaction value as key drivers of customer profitability. Marketing strategies that focus on enhancing these factors, such as cross-selling, up-selling, and product bundling, can significantly boost Customer Lifetime Value (CLV). The observed average LTV:CAC ratio of 11.5:1 suggests that MSMEs in this region generally maintain a healthy business model. However, sector-specific variations highlight the necessity of adjusting customer acquisition and retention strategies to match the unique characteristics of each industry.

For MSMEs to effectively develop marketing strategies based on customer profitability analysis, investments in training, technology, and robust data privacy policies are crucial. Support from the government and related institutions is essential to overcoming the current adoption barriers and enhancing MSMEs' capacity for data-driven decision-making.

Although this research focuses on MSMEs in the former Surakarta Residency, its findings provide valuable insights into the potential benefits and challenges of optimizing marketing strategies through data-driven customer profitability analysis. To fully leverage this approach, MSMEs should enhance their capacity for customer data collection and analysis, develop personalized marketing strategies using RFM segmentation, and focus on increasing purchase frequency and average transaction value. Additionally, implementing targeted loyalty programs, especially for the Platinum Customer segment, and ensuring a balanced approach to data utilization while safeguarding customer privacy are crucial steps.

Further research with larger samples and broader geographic coverage is necessary to validate these findings and explore sectoral and regional variations within Indonesian MSMEs. In conclusion, data-driven customer profitability analysis presents significant opportunities for MSMEs in the former Surakarta Residency to refine their marketing strategies. Achieving this potential will require collaborative efforts from MSME stakeholders, policymakers, and supporting institutions to overcome implementation challenges and foster an ecosystem conducive to adopting data-driven marketing practices.

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