

The Influence of Business Intelligence to Maintain Customer Relationships in Small and Medium Enterprises in Indonesia

Muhammad Faisal Yul Zamrudi^{1*}, Pungky Lela Saputri²

^{1,2} Fakultas Ekonomi, Universitas Islam Sultan Agung, Semarang, Jawa Tengah, Indonesia.

Email: faisal@unissula.ac.id¹, pungkylelasaputri@unissula.ac.id²

Abstract

The adoption of Business intelligence (BI) has become increasingly prominent among organizations for attracting customers and gaining a competitive edge. This becomes even more important for small and medium enterprises (SMEs) which face immense pressure to retain existing customers and attract more customers for survival. This study presents a systematic literature review of studies investigating the impact of BI on customer relations with exclusive focus on Indonesia, which has a growing number of SMEs (also called 'UMKMs'). By examining 15 papers published between 2013 to 2024, the findings of the study highlight that BI contributes to building better connections with customers and making them feel more engaged and satisfied. This study provides valuable insights for SMEs in Indonesia to adopt BI to attract more customers. The findings of the study also lay the foundation for future research, especially those wanting to perform an empirical investigation.

Keywords: Business intelligence, customer relationship, SMES, UMKM, Indonesia, systematic literature review.

INTRODUCTION

In the competitive business market and the globalized economies, there has been growing usage of effective technologies by companies for effective decision-making. Electronic data is helping design innovative strategies and generate quick customer responses in dynamic markets, making business environments more complex (Heang and Mohan, 2017; Kharade and Pathan, 2022). To reduce the complexity and provide benefits of efficient data management, advanced technologies, or dynamic infrastructure, there has been an initiation of BI (Tavera Romero et al., 2021). Business Intelligence (BI) has become a critical solution for dealing with complex datasets, creating high-quality visuals and trends to support a company's decision-makers. It also allows real-time access of information to employees, helping them make valuable deductions intuitively and effectively (Abu-Alsondos, 2023; Andriana et al., 2023). The concept of BI encompasses a broad range

of components such as social media analysis, sentiment analysis, and big data analysis, wherein large amounts of real-time data is collected, mined, and analyzed (Usman and Awwalu, 2015; Vasishta and Sreenivasa, 2016; Huang et al., 2017).

Customer relationship management (CRM) is a tool for success in competitive business environments, helping businesses connect with customers and foster long-term relationships using their data (Özgener and Iraz, 2006). It helps investigate customer satisfaction, engagement, and intelligence with the goal of identifying the most valued ones for the company (Shahnazari, Ghiri and Jannati, 2014; Informatica, 2019; Kumar and Kumar, 2023). This focus on customer becomes even more crucial for small and medium enterprises (SMEs) due to the presence of severe challenges in expanding their business and surviving in a competitive business market. It further helps SMEs by enabling improved business performance, enhancing productivity, promoting innovation, raising market share, reducing cost, and improving customer value (Nugroho, Suharmanto and Masugino, 2018). Since the absence of customer retention could result in huge losses for the company, the implementation of advanced technologies for assessing customer data becomes paramount. BI serves as a tool for understanding customer insights and deducing the pattern and trend in customer behavior for supporting decision-makers (Hadhoud and Salameh, 2020). The usage of BI enables customer demand prediction and fulfillment to enhance customer satisfaction (Heang, 2017). Also, the knowledge of customer demand helps SMEs prioritize customer needs, resulting in building better connections with customers (Kajtazi and Andersson, 2018).

Indonesia in recent years has seen an explosion in the number of SMEs, also called as 'UMKMs' (Juanda, Risky and Ilham, 2023). However, the country's vastness, macroeconomic challenges such as Covid-19 pandemic, and an extremely competitive business environment have posed a challenge in recent years for the country's UMKMs' continued sustainability. On the customer relationships front, challenges such as lack of awareness about importance of CRM (Gaffar, Budiman and Tjahnojo, 2020), limited resources and skills (Hasman, AndreLubis and Alfifto, 2023) and lackluster social and regulatory environment (Chong and Janita, 2013). On the other hand studies have also linked UMKMs' BI adoption to increased networking and innovation, leading to business success (Triono and Jaya, 2020). Therefore, the research question of this study is: What is the contribution of BI in supporting customer relationships for SMEs in Indonesia?

METHOD

To understand BI's role, this study used the qualitative analysis methodology wherein using the systematic literature review and the PRISMA analysis methodology, the relevant studies were identified. The specification of the keywords, inclusion and exclusion criteria, and the data sources, enables the identification of only studies that were related to the study's research area i.e. BI and customer relationships in SMEs. PRISMA analysis method was chosen as it enables the

identification of accurate and specific parameters that are essential for removing unconscious prejudice or study selection biases.

Inclusion and exclusion criteria

The inclusion of papers in the study was as per the following criteria:

1. The article was written in the English language.
2. The access to the article was full.
3. The publication date of the article was between February 2013 to February 2024.
4. The article was published on the official database.
5. The study discussed the concept of business intelligence or its related terms.
6. The focus of the article was on customer relationships or related keywords.

The papers were excluded from the study as per below criteria:

1. The full-text version of the article was not available.
2. The article was written in a language other than English.
3. The article was published before February 2013.
4. The article is not from any official database.
5. The article does not have anything related to business intelligence or its related concepts.
6. The article had no information on customer relationship or its related topics.

Keywords used

The keywords were the terminologies like business intelligence, BI, business analytics, social media analytics, big data, or sentiment analysis for BI; and customer intelligence, customer satisfaction, customer relationship, customer experience, customer engagement, user, or customer for the customer relationship. To focus on Indonesia, especially Indonesia was included as the keyword. Finally, for the SMEs, the words like SME, MSME, or Startups were included.

Data sources and filtration

The studies for the evaluation were collected from online databases such as Scopus, ScienceDirect, Google Scholar, or Web of Science. The search for the studies was done using several search queries with the inclusion of specified keywords. Including all these keywords, the search strategy was

("Business intelligence" OR "BI" OR "Business analytics" OR "Social media analytics" OR "Big data" OR "Sentiment analysis") AND ("Customer intelligence" OR "Customer satisfaction" OR "Customer relationship" OR "Customer experience" OR "Customer engagement" OR "User" OR "Customer") AND ("Indonesia") AND ("SME" OR "MSME" OR "Startup").

Applying the stated search strategy and the filtration of the papers based on the criteria that the article is fully accessible and published between 2013 to 2024, the stated 15 papers were selected.

RESULTS AND DISCUSSION

PRISMA diagram

Data analysis method

The study employed the SLR method for the examination of the collected papers. Herein, for the overview of the study characteristics initially, the visual and tabular examination was done. Following this, the influence of BI in customer relationships was examined using the SLR method.

1. Data analysis

Chronological distribution of studies

The examination of the studies' publication date reveals that as per the inclusion criteria, the selected papers are from 2013 to 2024. Herein, the maximum frequency of papers is from the last 4 years i.e. 2020, 2021, 2022, and 2023 with each having 5 papers selected for examination. In 2013, the concept of BI was present thus, there are 2 papers from that period while in 2019 there is only 1. This trend of published papers reveals that in recent years only, there has been more focus of even researchers too on the exploration of BI impact on customers representing growing BI adoption over the years.

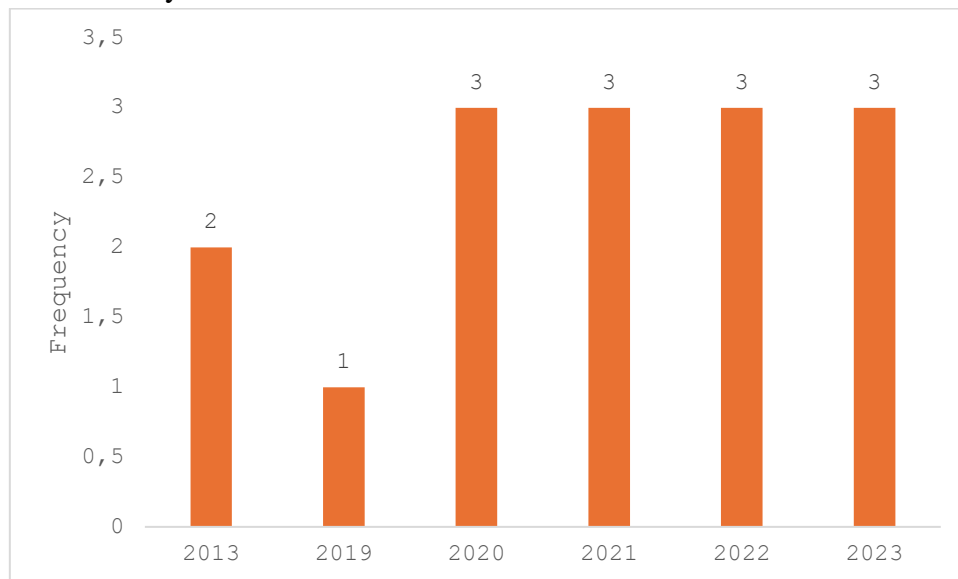


Figure 1. Publication by the date

Distribution of studies by industry

The focus of the study was on SMEs in Indonesia but to have the wider application of the outcomes, instead of restricting to one industry, the study included papers focused on banking, Fintech, hospitality, investment, manufacturing, or tourism industry. As 4 papers have not specified their industry sector, therefore, they were labeled as general. Also, 2 papers each are from SMEs and startups. In summary, most of the research is not sector-focused but generally specifies a lack of research availability centered on a particular industry for BI implementation in Indonesia.

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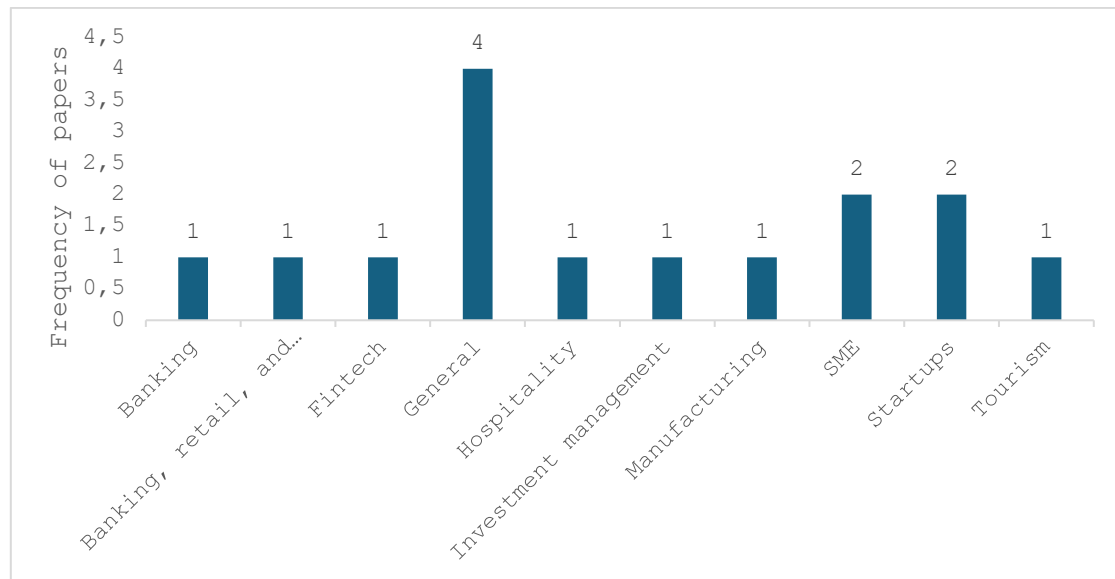


Figure 2. Publication by industry

Distribution of studies by research approaches

The analysis revealed that among the selected 15 papers, the majority i.e. 53% of the research are qualitative, 40% are quantitative and only 7% are mixed. This reveals that the existing researcher's major focus was on evaluating theoretically the BI implementation and its contribution without having much empirical assessment. Thus, at the SME level in Indonesia, there is a need to draw empirical evidence and statistical analysis to understand BI's contribution to influencing customer relationships.

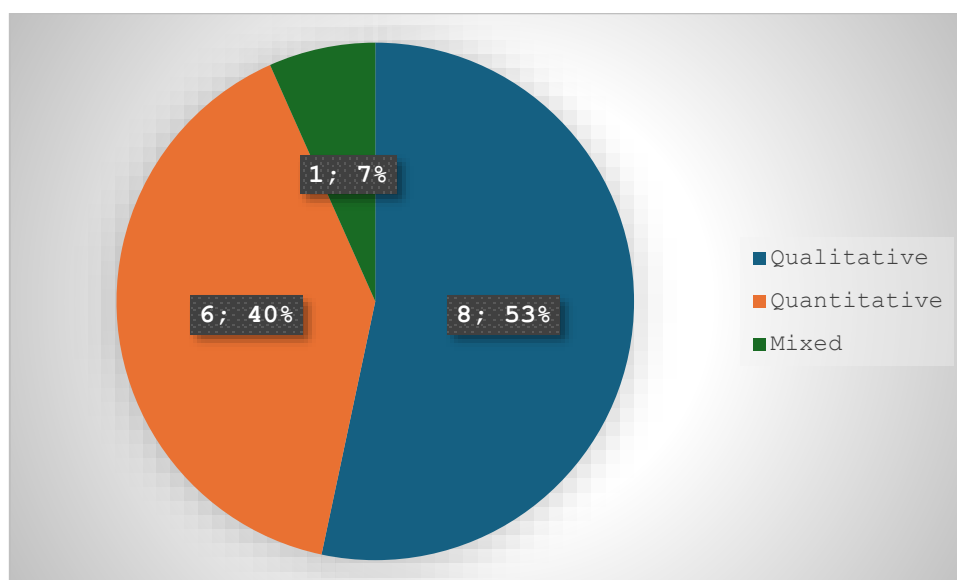


Figure 3. Distribution by research approach

The examination of all papers also revealed that all the selected papers are from different journals (except 1 journal having 2 studies) representing less exploration of the BI in Indonesia and limited research present about its influence on customer relationships.

Table 1. Publication journals

No	Journal name	Frequency
1	Advances in Economics, Business and Management Research	1
2	Advances in Social Science, Education and Humanities Research	1
3	arXiv	1
4	Atlantis Highlights in Engineering	1
5	Austin Journal of Business Administration and Management	1
6	International Journal of Communication & Information Technology (CommIT)	2
7	IEEE	1
8	Information	1
9	Interdisciplinary journal of information, knowledge, and management	1
10	International Journal of Business Intelligence Research	1
11	International Journal of Data Science	1
12	International Journal of Research and Applied Technology	1
13	Proceeding, 6th International Seminar on Industrial Engineering and Management	1
14	Sustainability	1

BI measures

The study aimed to explore the influence of BI on maintaining customer relationships in SMEs in Indonesia. For this, the review focused on including the studies which are discussing the BI concept. However, there are many terminologies used for denoting BI like social media analysis as the discipline that enables organizations to derive insights from social media and use them to help businesses align their work with the needs (Ruhi, 2014; Vasishta and Sreenivasa, 2016), sentiment analysis which is the methodology used within business intelligence for understanding the sentiment or feeling of an individual i.e. positive or negative (Usman and Awwalu, 2015; Sinha and Sathiya Narayanan, 2024), or big data analysis wherein the large volume of data with extreme variety or velocity could be analyzed for improving business functioning and making decisions (James He, 2014; Huang *et al.*, 2017; Kimbahune *et al.*, 2023). Each of the stated terminology goals is to examine a large amount of real-time data for making some valuable deductions for businesses and fulfilling consumer needs. Therefore, the research included studies related to all these 3 terms and the business intelligence to understand the influence of BI adoption.

Table 1. Measures of BI

BI measure	Studies
Business intelligence	10 (Fitriana and Djatna, 2013; Sundjaja, 2013; Hadhoud and Salameh, 2020; Kurniawan <i>et al.</i> , 2021a; Saha <i>et al.</i> , 2021; Triono and Jaya, 2021; Candra and Nainggolan, 2022; Febrianti and Herbert, 2022; Ibrahim and Handayani, 2022; Kongthanasuwan <i>et al.</i> , 2023)
Social media analysis and sentiment analysis	1 (Rabbani, Alamsyah and Widiyanesti, 2021)
Big data analysis	3 (Indriasari, Gaol and Matsuo, 2019; Yudhistyra <i>et al.</i> , 2020; Williady and Ban, 2023)
Social media analysis	1(Aa <i>et al.</i> , 2023)

Customer relationship measures

The customer relationship is an important aspect for businesses to maintain a positive connection with customers, retain existing customers, and attract new customers. The study aim was focused on maintaining customer relationships in SMEs, however, customer relationship management is not a simple concept. The selected studies show that majorly the term satisfaction was present, followed by experience and relationship.

There are many related concepts to customer relationships like customer intelligence wherein a system is developed to record customer-related data and provide complete information about customers to the organization for executing the right strategies (Informatica, 2019), customer engagement to connect better with customers and employ the strategies for achieving the purpose (Indarto, Mulyanto and Sumiati, 2021; Mandal, 2023), customer experience which defines the affective or cognitive response of customers towards the organization (Shahnazari, Ghiri and Jannati, 2014), and customer satisfaction which is the end result of having effective customer relationship i.e. the customers satisfied with services and willing to remain connected with business (Kumar and Kumar, 2023). The terms though initially seem to be different, but the purpose of each terminology is to have the required insights about the customers for building a strong connection with them and keeping them associated with the business. As SMEs are especially in need of good customer relationships to survive, therefore, majorly the primary goal for these companies is to build strong relationships with customers and create positive experiences for them so that not just the existing customers are there but also new customers could be attracted. Thus, considering the relevance of terminologies in measuring the essence of

customer relationships, the influence of BI was assessed by including papers having these terms.

Table 2. Measures of customer relationship

Customer relationship measures	No. of studies
Customer intelligence	1 (Triono and Jaya, 2021)
Customer relationship	3 (Indriasari, Gaol and Matsuo, 2019; Yudhistyra <i>et al.</i> , 2020; Kongthanasuwan <i>et al.</i> , 2023)
Engagement	1 (Aa <i>et al.</i> , 2023)
Experience	3 (Kurniawan <i>et al.</i> , 2021a; Febrianti and Herbert, 2022; Ibrahim and Handayani, 2022)
Satisfaction	7 (Fitriana and Djatna, 2013; Sundjaja, 2013; Hadhoud and Salameh, 2020; Rabbani, Alamsyah and Widiyanesti, 2021; Saha <i>et al.</i> , 2021; Candra and Nainggolan, 2022; Williady and Ban, 2023)

BI framework contribution to customer relationship for SMEs

The SLR findings reveal that the implementation of BI by SMEs in Indonesia contributes to majorly having a positive influence on customer relationships. Measuring the satisfaction of customers by the fulfillment rate, delivery time, and customer satisfaction metrics, there is the possibility that BI would lead to raising the customer retention rate and strengthen the relationship of customers with the business (Hadhoud and Salameh, 2020). Even the quality of services offered to customers and the net benefits derived are also valuable for customers as they define the nature of services that the company delivers to customers, thus, with the implementation of business analytics the organizations can make customers feel valuable and satisfied (Saha *et al.*, 2021; Candra and Nainggolan, 2022; Febrianti and Herbert, 2022; Ibrahim and Handayani, 2022; Kongthanasuwan *et al.*, 2023). The integration of BI in working enables organizations to examine the consumer's not just demographic characteristics but psychometric, geographical, and social characteristics too. This understanding of customers from all grounds enables SMEs to prioritize customer demand and launch a product as per the demographical characteristics of the region and get more customers connected to them (Sundjaja, 2013; Kurniawan *et al.*, 2021b; Triono and Jaya, 2021).

Also, often many companies instead of just relying on random information focus on assessing the perception of customers before designing their strategies. This could be by social media analysis and sentiment analysis. The data collected from

reviews or tweets are examined and based on the nature of responses the focus areas are decided. This sentiment-based decision-making helps in creating a positive image of companies for customers and creates a more friendly and responsive environment (Rabbani, Alamsyah and Widiyanesti, 2021; Aa *et al.*, 2023). These positive sentiments become more valuable for SMEs as the satisfaction from available products or services defines the perception of customers and the presence of positive reviews becomes the source of connecting new customers with the company (Williady and Ban, 2023). Therefore, business analytics in the form of social media analysis or sentiment analysis is an important approach to understanding the satisfaction level of existing customers and affirming new customers about companies' services and products.

In the world of large real-world data, a major challenge is to derive valuable insights from the data. Big data analysis enables resolving the issue and using the data to understand the customer's perspectives. With big data, more personalized services are developed for customers and even there are opportunities with organizations to provide better access to resources to customers and have product categorization (Yudhistyra *et al.*, 2020). By using BI in the form of big data analysis, companies could not only improve their relationship with customers but also derive more engagement (Indriasari, Gaol, and Matsuo, 2019).

In conclusion, the BI is the means of deriving more interaction with customers. SMEs need to develop their customer base for success, hence, for them specially, BI integration in working is important to ensure customers of the products and services quality and constant focus of the organization towards fulfilling customers' needs.

CONCLUSION

This SLR examines BI adoption in Indonesian SMEs and its impact on maintaining customer relationships. While there has been increased attention on BI in recent years, empirical evidence on its statistical impact is limited. The study emphasizes BI as a complex concept, encompassing terms like big data and social media analysis. Customer relationships extend beyond traditional notions, including satisfaction, engagement, and experience influenced by BI. Research findings suggest BI enables customer satisfaction and demand fulfillment, offering opportunities for customized products and positive customer environments. The study highlights the need for SMEs to adopt BI for customer-centric services and informed decision-making. However, limitations include a focus on Indonesian SMEs, and future studies are encouraged to build empirical evidence by expanding geographical scope and examining BI adoption impact in SMEs.

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