

# Analysis of Digital Marketing Utilization: Prospects for Implementing Artificial Intelligence-Based Chatbots in Madura Snack Micro, Small, and Medium Enterprises (MSMEs)

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### ARTICLE HISTORY

Received: 09 September 25

Final Revision: 28 September 25

Accepted: 05 October 25

Online Publication: 30 December 25

### KEYWORDS

Micro, Small, and Medium Enterprises (MSMEs), Digital Marketing, Artificial Intelligence, Chatbot, Customer Experience

### KATA KUNCI

Usaha Mikro, Kecil, dan Menengah (UMKM), Pemasaran Digital, AI, Chatbot, Pengalaman Pelanggan

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### DOI

10.37034/jems.v8i1.240

### ABSTRACT

The use of digital technology, particularly AI (Artificial Intelligence)-based chatbots, has great potential to improve efficiency and customer experience for Micro, Small, and Medium Enterprises (MSMEs). However, the implementation of this technology in MSMEs, especially in Madura specialty snack MSMEs, still faces various challenges. This study uses a qualitative approach with case studies to analyze the use of digital marketing with the prospect of implementing AI-based chatbots in Madura specialty snack MSMEs. Data was collected through interviews, observations, and documentation, then analyzed using NVivo 15 software. The results of the analysis show that although chatbots are already in use, their use is still considered limited by certain parties. The main benefits felt are work efficiency and quick responses. However, there are several major obstacles that hinder optimization, such as the limited understanding of MSME players, technical issues related to accuracy and language, as well as concerns about costs and resistance to change due to fear of losing personal interaction. Nevertheless, expectations for chatbot development vary, with business owners focusing on system integration, while consumers and employees expect product recommendation features. This study concludes that to optimize the use of this technology, continuous education and the availability of affordable chatbot solutions are needed.

### ABSTRAK

Penggunaan teknologi digital, khususnya *chatbot* berbasis AI (*Artificial Intelligence*), memiliki potensi besar untuk meningkatkan efisiensi dan pengalaman pelanggan bagi Usaha Mikro, Kecil, dan Menengah (UMKM). Namun, penerapan teknologi ini pada UMKM, terutama UMKM camilan khas Madura, masih menghadapi berbagai tantangan. Penelitian ini menggunakan pendekatan kualitatif dengan studi kasus untuk menganalisis penggunaan pemasaran digital dengan prospek penerapan *chatbot* berbasis AI pada UMKM camilan khas Madura. Data dikumpulkan melalui wawancara, observasi, dan dokumentasi, kemudian dianalisis menggunakan perangkat lunak NVivo 15. Hasil analisis menunjukkan bahwa meskipun *chatbot* telah digunakan, penggunaannya masih dianggap terbatas oleh pihak tertentu. Manfaat utama yang dirasakan adalah efisiensi kerja dan respons yang cepat. Namun, terdapat beberapa hambatan besar yang menghalangi optimalisasi, seperti keterbatasan pemahaman pelaku UMKM, masalah teknis terkait akurasi dan bahasa, serta kekhawatiran mengenai biaya dan resistensi terhadap perubahan akibat ketakutan kehilangan interaksi personal. Meskipun demikian, harapan terhadap pengembangan *chatbot* bervariasi, dengan pemilik usaha berfokus pada integrasi sistem, sementara konsumen dan karyawan mengharapkan adanya fitur rekomendasi produk. Penelitian ini menyimpulkan bahwa untuk mengoptimalkan penggunaan teknologi ini, diperlukan edukasi berkelanjutan serta ketersediaan solusi *chatbot* yang terjangkau.

## 1. Introduction

The Micro, Small, and Medium Enterprises (MSME) sector plays an important role in job creation, innovation, and economic growth [1]. MSMEs are a vital foundation of the Indonesian economy, playing a crucial role in job creation and income distribution [2]. In this rapidly developing digital era, MSMEs must adapt and adopt new technologies to increase

competitiveness and expand their markets [3]. Based on the data on Figure 1, it can be seen that there are 14,433,048 units of wholesale and retail trade, repair and maintenance of cars and motorcycles, followed by accommodation, food, and beverage services with 6,400,667 units, processing industries with 4,164,542 units, and other services with 1,906,799 units [4].



Figure 1. Number of MSMEs in Indonesia by Business Sector as of December 31, 2024 [4]

Digital marketing has become essential to remain relevant and attract consumers' attention in a highly competitive landscape [5]. Based on the data on Figure 2, Artificial Intelligence is most often used for marketing media (14%), product development (13%), operational services at 10%, risk management at 4%, strategy/finance at 4%, human resource management at 3%, supply chain management at 3%, and manufacturing at 2% [6]. The use of various digital platforms opens up significant opportunities for MSMEs to interact directly with customers, promote

products, and build brand identity. Furthermore, the implementation of artificial intelligence (AI) can help marketers create personalized experiences for customers that have the potential to significantly improve business results [7]. Digital marketing, which includes the use of social media, e-commerce, and search engines, is an essential strategy for MSMEs. This strategy allows them to reach and retain customers without requiring large investments in physical stores [8].

#### Penggunaan Artificial Intelligence/AI Generatif di Industri Global (2023)

databoks

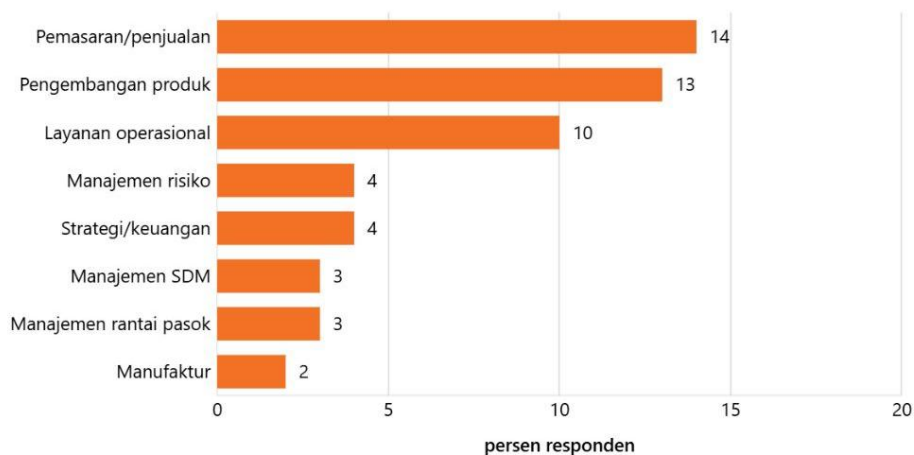


Figure 2. The Use of Generative Artificial Intelligence/AI in Global Industry (2023) [6]

Amid these challenges, Artificial Intelligence (AI) has emerged as a potential solution. Advances in AI have enabled the automation of various business processes, including customer interactions [9]. One of the most relevant AI applications for MSMEs is chatbots. Chatbots are computer programs designed to simulate human conversation [10]. AI-based chatbots can provide smarter and more personalized responses, understand the context of questions, and even process simple transactions [11].

The implementation of chatbots can fill the void that exists in MSME digital marketing [12]. Chatbots are capable of serving customer inquiries 24/7, overcoming the limitations of time and human resources. They can also speed up response times, which directly correlates with increased customer satisfaction and purchasing decisions [13]. Additionally, chatbots can collect valuable interaction data, which SMEs can use to understand customer preferences and improve their marketing strategies [14].

One MSME sector with great potential is Madura's traditional snack MSMEs, which have authentic value and unique appeal that can compete in a wider market. However, many of these SMEs are still struggling to optimize this potential. Although the potential of AI chatbots is enormous, the majority of Madurese snack SMEs, such as *kriyukin.yuk*, still have a limited understanding of the benefits and workings of AI-based chatbots. They may be aware of the existence of technologies such as AI, but do not fully understand how these tools can be tailored to meet their specific business needs. For example, many are unaware that chatbots can function as 24/7 sales assistants, answer general questions about products (such as prices, flavor variants, or how to order), or even help track orders. This knowledge gap prevents them from seeing the value of investing in this technology, so they tend to prefer conventional marketing methods that are familiar to them, such as word of mouth or manual promotion on social media.

Based on an interview with the owner of *kriyukin.yuk*, Aisyah said that marketing has been carried out both offline and online. Offline marketing is carried out using various methods, starting with giving samples to friends in the neighborhood and using word of mouth, but the obstacle is a lack of experience in online marketing in e-commerce, such as the Shopee account, which has not yet reached a wide range of consumers, even though the sales rating for fish crackers, the flagship product of this MSME, is 4.8. Additionally, the chatbot feature on e-commerce accounts has not been utilized effectively due to a lack of digital literacy in e-commerce, which also hinders the use of AI in the form of chatbots. Challenges with chatbots include unstable internet access and outdated devices, making it difficult for SMEs to integrate chatbots into their social media or online stores.

Many SMEs perceive AI technology as expensive and only suitable for large companies. Consequently, they are concerned that monthly subscription or maintenance costs will burden their finances. In addition, many MSMEs are hesitant to use chatbots because they are accustomed to the old ways. They worry that chatbots will eliminate personal contact with customers. In fact, chatbots actually help, rather than replace human interaction. Many MSMEs are hesitant to use chatbots because they are accustomed to the old ways. They worry that chatbots will eliminate personal interaction with customers. In fact, chatbots actually help, rather than replace human interaction. On the other hand, according to a consumer named Diana, the products from these MSMEs are of good quality because they contain sea fish ingredients that have been developed into snacks. In terms of price perception, they are also considered cheap because one package is sold for IDR 14,000, while competitors sell theirs for IDR 20,000. However, the challenges faced by this SME include the absence of business labeling and unattractive packaging.

## **2. Research Method**

### **2.1. Research Approach**

A qualitative approach with case studies allows researchers to understand phenomena in real-life contexts. This approach is effective for exploring the meanings and experiences of individuals in specific situations. In this context, case studies of Madurese snack MSMEs provide deep insights into how AI chatbots are used in their marketing strategies.

### **2.2. Data Collection Methods**

The data collection methods used in this study were interviews, observation, and documentation. These methods were used to gain a comprehensive understanding of the use of AI-based chatbots in Madurese snack MSME businesses. Interviews were used to gather in-depth information from MSME players, including their experiences, views, and strategies in digital marketing using chatbots. Observations were conducted by directly monitoring interactions between SMEs and customers through chatbots, allowing researchers to see firsthand how this technology is implemented in daily practice. Meanwhile, documentation included analysis of promotional materials, chatbot conversations, and other relevant data that supported researchers in understanding the patterns and effectiveness of chatbot use in SME digital marketing strategies. With a combination of these three techniques, the study was able to produce rich and detailed data, which was then analyzed using NVivo 15 to find themes, patterns, and in-depth insights.

### 3. Result and Discussion

The informants in this study were the owners of kriyukin.yuk, producers, with a total of four informants. After the interview results were collected, the researcher coded the keywords from each sentence spoken by each informant. The research analysis was conducted using Nvivo 15 software. There were four forms of data visualization that the researcher applied in presenting the results of the data processed by the Nvivo 15 software.

The word cloud visualization generated by NVivo 15 software was used as one of the data sources in this study. The image on Figure 3 shows frequency of the most frequently found keywords in the primary data [15]. The larger the size of the word, the higher the frequency of its appearance. The word “CHATBOT” appears as the most dominant topic and is the focus of discussion in the analyzed data. The very large size of this word indicates its highest frequency of occurrence, signifying that chatbot technology is a central theme in this study. It effectively illustrates that chatbots are a major topic closely related to fast and automated customer support functions in an online promotional environment.

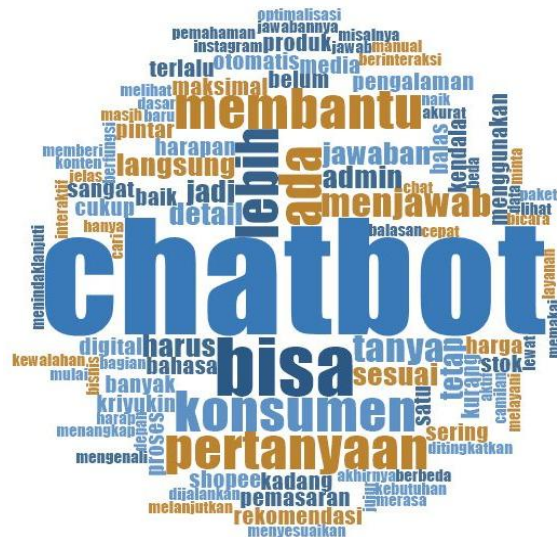


Figure 3. Word Cloud

### 3.2. Word Frequency Query

Word Frequency Query in NVivo is a text analysis feature that counts how often certain words appear in a qualitative data set [16]. Based on the results of the NVivo 15 data analysis on Figure 4, this tree map shows that the main keywords in the study are “chatbot” and “can,” confirming that the discussion centers on this technology and its potential. The analysis shows that the most dominant functions of chatbots are their ability to “help” and “answer questions,” which are highly relevant to their primary role as virtual assistants. The interaction between chatbots and their users is also a focus, with words such as ‘consumer’ and “admin” appearing as the main subjects.



Figure 4 Word Frequency Query

Although chatbots have great potential, this map also highlights existing challenges. Words such as “not yet,” “lacking,” and “obstacles” indicate that implementation still faces barriers. The main obstacles identified, which appear as branches of these words,

are issues of ‘language’ and “accuracy,” indicating that these technical problems are universal barriers to use. Additionally, the connection between chatbots and “digital marketing” and platforms such as ‘Shopee’ and “Instagram” shows where this implementation is most

relevant for MSMEs. Overall, this visualization effectively maps the relationship between the main topic (chatbots), their functions, challenges, and the context of their application in MSME digital marketing.

### 3.3. Hierarchy Chart

Hierarchy charts are a form of qualitative data visualization displayed in hierarchy diagrams or tree maps to show comparisons of the proportions of a category or node [17]. The use of chatbots in MSMEs faces challenges despite its great potential. Based on analysis on Figure 5, the main benefits of chatbots are work efficiency and response speed, which are considered important by all parties, from owners and consumers to employees. However, its implementation is still limited. Development expectations vary: business owners focus on system integration to improve operational efficiency, while consumers and employees expect product recommendation features that can help sales. The main obstacles hindering chatbot optimization are technical issues such as accuracy and language, which are universally complained about, as well as more specific personalization issues for employees.

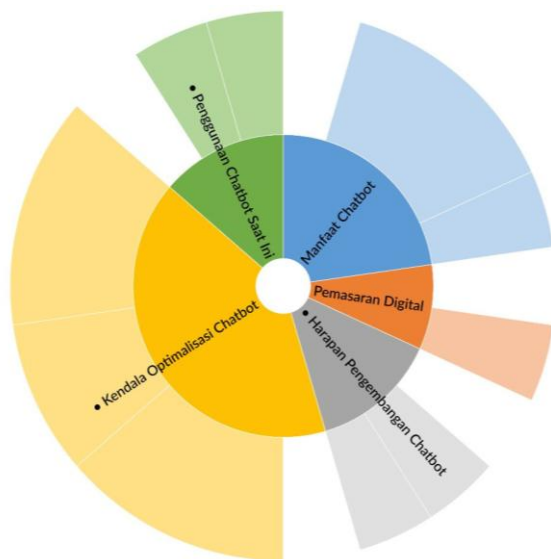


Figure 5. Hierarchy Chart

### 3.4. Project Map

#### 3.4.1. Chatbot Development Expectations

The analysis shows that there are two main expectations that emerge from the data, namely “Integration with the system” and “product recommendations.” The expectation for “System integration” was specifically expressed only by Aisyah (Owner). This indicates that business owners prioritize the operational and technical aspects of chatbots. This integration is likely expected to improve efficiency, automate workflows, and enable better data management. Conversely, the expectation for “product

recommendations” emerged from various parties, namely Rahmat (Consumer), Mrs. Lilik (Producer), and Edi (Employee). The involvement of these three different roles indicates that this expectation is cross-functional and highly relevant to those directly involved in the sales process.

For consumers, this feature enhances the shopping experience. Meanwhile, for manufacturers and employees, the product recommendation feature is expected to be an effective marketing and sales tool to automatically promote products. Overall, this visualization effectively summarizes those expectations for chatbot development vary greatly. Business owners are more focused on operational efficiency, while frontline players (consumers, producers, and employees) have expectations that are more oriented towards sales and marketing functions. This aligns with research which states that user satisfaction levels are very high when chatbots are well-integrated into SME communication systems, enabling customers to receive fast, efficient, and satisfying service [18].

#### 3.4.2. Chatbot Optimization Challenges

Based on this diagram, there are three obstacles to chatbot optimization: accuracy, language, and personalization. Accuracy and language are the most common obstacles, as they are complained about by almost everyone. Meanwhile, personalization is only a concern for Edi (Employee), indicating that this issue is more specific to certain roles. In essence, this diagram clarifies that technical issues (accuracy and language) are universal obstacles, while interaction issues (personalization) are more specific to employees. This is in line with research which states that research on the use of chatbots in MSMEs shows technical obstacles such as lag and errors, language barriers due to limited understanding of local dialects, and consumer concerns regarding data privacy [19]. These factors are important challenges that must be anticipated in order for chatbot implementation to be more effective and acceptable to users.

#### 3.4.3. Benefits of Chatbots

This diagram clearly shows that the benefits of chatbots vary depending on the role of each party. Work efficiency benefits are considered important by business owners and consumers, albeit from different perspectives. Meanwhile, the benefit of quick responses is considered crucial by consumers and producers, both of whom are highly dependent on the speed of interaction. This benefit is also recognized by Edi (Employee), who points out that the speed of chatbots is very helpful in daily tasks.

This visualization effectively distinguishes between benefits oriented toward operational efficiency and those oriented toward speed and customer satisfaction. This is in line with research which states that customer satisfaction with chatbots is influenced by several

important factors [20]. Trust has a positive, albeit moderate, effect, while perceived competence has a stronger and more significant influence. Social communication style has been shown to be the most

dominant factor because it creates emotional closeness, while perceived warmth also contributes to increased satisfaction, albeit with a smaller influence [20].

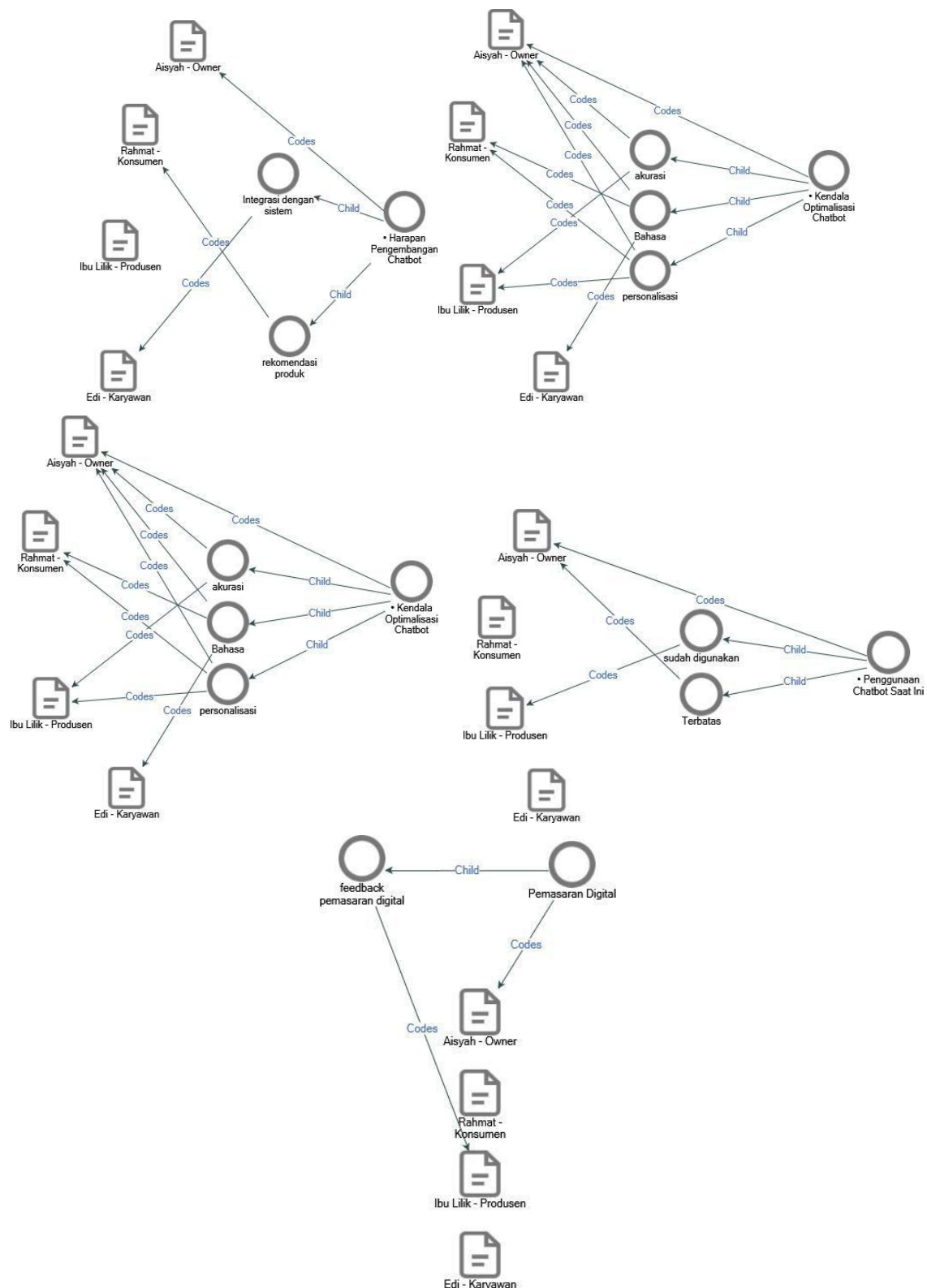


Figure 6. Project Map

### 3.4.4. Current Use of Chatbots

This diagram shows that chatbots are already in use, but their use is still considered limited by certain parties. Most participants (owners, consumers, and producers) have acknowledged the existence and use of chatbots. However, the most significant obstacles or limitations come from the perspective of employees, who are likely to have to deal directly with chatbots that are not yet optimal in helping them with their work. Visually, this diagram effectively separates the general perception of chatbot usage from the specific perception of employees. This is in line with research which states that even though chatbots are becoming more sophisticated, their adoption in customer service remains low [21]. One of the main reasons for this is “gatekeeper aversion,” or customers' dislike of the initial chatbot process, which can prevent them from accessing human services. Distrust of algorithms (algorithm aversion) also exacerbates low usage [21].

### 3.4.5. Digital Marketing

Based on the “Digital Marketing” diagram, Aisyah (Owner) is the main actor in the implementation of the

marketing strategy. Meanwhile, Rahmat (Consumer), Mrs. Lilik (Producer), and Edi (Employee) act as feedback providers. They are not involved in planning, but rather provide their responses and experiences regarding the strategies that have been implemented. Thus, this diagram effectively separates the roles of implementers and evaluators in the topic of digital marketing.

This is in line with the research which states that digital marketing is very important for the effectiveness of MSMEs as a driver of digital transformation, leading to stronger economic results and a broader market presence [22]. Interacting with customers through digital channels to understand their behavior and preferences helps organizations create better experiences and products, as well as sell more intelligently [22].

Thus, the chart on Figure 7 outlines the relationship between the findings obtained from the primary data analysis regarding the use of chatbots to promote Maduraese snacks. The data analysis was conducted using NVivo 15 software and obtained through the following recording and analysis.

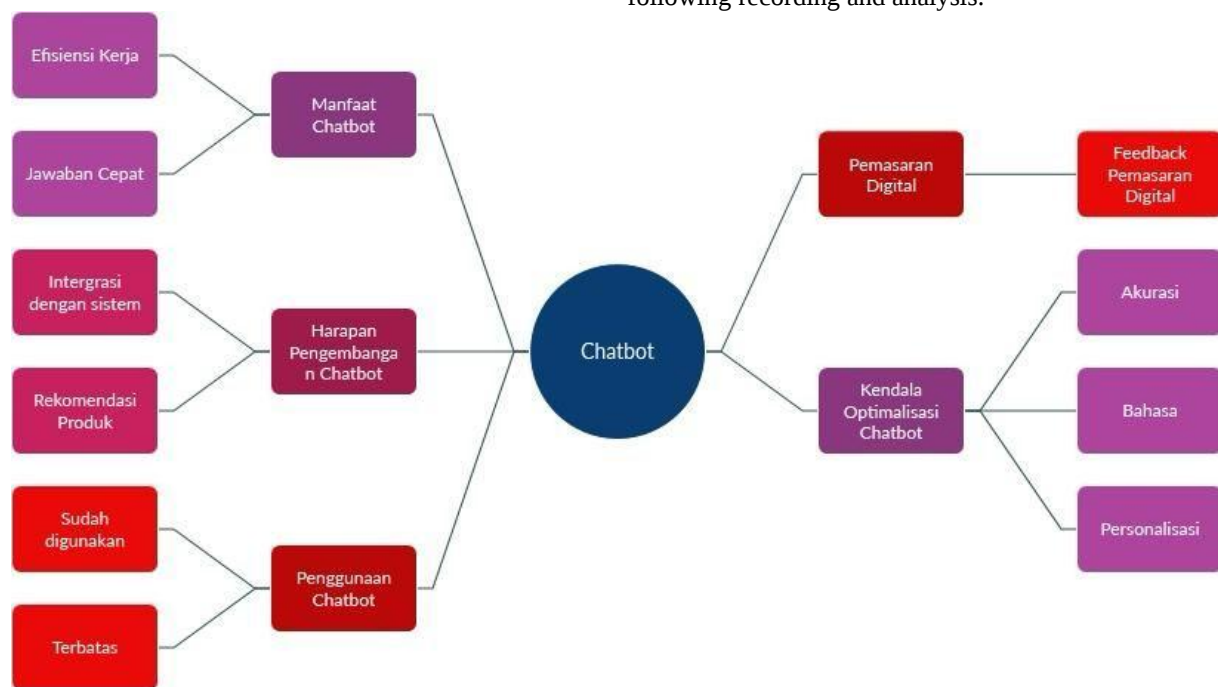


Figure 7. Mind Map of Digital Marketing Chatbot Use for Madura Specialty Snacks

## 4. Conclusion

Although AI-based chatbots have great potential to improve efficiency and customer experience for MSMEs, their implementation still faces various challenges. The main obstacles are the limited understanding of MSME players, technical issues such as accuracy and language, cost concerns, and resistance to change. To optimize the use of this technology, continuous education and the availability of affordable chatbot solutions are needed. It is recommended that

MSME players improve their digital literacy through training and special assistance so that they are able to understand and integrate chatbots into their business operations. Technology providers need to design chatbots that are MSME-friendly, simple, support local languages, and can be personalized according to the needs of small businesses. Financial support is also very important, whether through subsidies, incentives, or affordable subscription packages so that MSMEs are not burdened by costs. In addition, the implementation process needs to be carried out in stages with

socialization of the benefits to business owners, employees, and customers to reduce resistance to change. In the future, further research can expand the study to various MSME sectors, measure the real impact of chatbot use on business performance, and explore its integration with other technologies such as social media and e-commerce.

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