
IN-DEPTH ANALYSIS OF THE EXPERIENCE OF SHALLOT FARMERS IN IMPLEMENTING ICT-BASED MARKETING STRATEGIES

Savira Chalim Indarsari ¹, Subagyo ²,

Nusantara University PGRI Kediri, Jl. KH. Ahmad Dahlan No.76, Majoroto, Kediri City, East Java, 64112, Indonesia

safirachalim18@gmail.com¹, subagyo@unpkediri.ac.id²

*corresponding author

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Abstract (dalam bahasa Inggris)

Research Objectives: This study aims to deeply understand the experience of shallot farmers in Sukomoro Village, Nganjuk Regency, in implementing ICT-based marketing strategies. The main focus of the research is to uncover how the application of information and communication technology (ICT) affects the marketability of shallot products, increases farmers' income, and expands market reach.

Design/Method/Approach: This study uses a descriptive qualitative method. Data was collected through interviews, observations, and document analysis by shallot farmers in Sukomoro Village, Nganjuk Regency. In this study, the data source came from several informants who had an understanding of marketing strategies in Sukomoro Village. Meanwhile, the object of the research is red bwang farmers.

Research Findings: The findings in this study reveal that the implementation of ICT (Information, Communication, and Technology)-based strategies has a significant effect on product sales and increasing the marketability of shallots in Sukomoro Village, Nganjuk Regency

Theoretical/Originality Contribution: This research contributes to the literature on ICT-based marketing in the agricultural sector, especially on shallot commodities. This research also provides new insights into farmers' experiences in adapting to technology in specific local contexts.

Practitioner/Policy Implications: The results of this research can be a reference for local governments in designing digital literacy training programs for farmers with the private sector for the development of ICT-based technology in the agricultural sector

Research limitations: This study focused only on one village as a case study, so the results may not be fully generalizable to other regions. In addition, this study relies on interviews as the main source of data, which can be influenced by the subjectivity of respondents.

Keywords: *ICT-Based Marketing Strategy, Farmer Experience, Product Selling Power*

1. Introduction

Agriculture is an important sector in the Indonesian economy, precisely in rural areas. Agriculture has an important role in the Indonesian economy, such as contributing to the

provision of food and job creation for the community. One of the important agricultural commodities is shallots, which not only meet domestic needs, but also have the potential to be exported. Shallots are one of the important key ingredients in any cuisine that has a unique flavor and is able to enhance the taste of each food, however shallot farmers often face problems in marketing their products. The goal of these farmers is how they can increase the marketability of their products, but the challenges they often face such as price instability and limited access to marketing [1].

Nganjuk Regency is one of the important areas in East Java to produce shallots. In fact, Nganjuk is one of the largest shallot producing centers in East Java. Nganjuk Regency has a large area of shallot plantations. Shallot farmers are the largest in East Java with an annual harvest area of 12,000 hectares (ha), with a productivity of about 12 tons per hectare [2]. Since Sukomoro Village is the largest shallot-producing center in Nganjuk Regency, it is not surprising that many residents plant, dry, and sell shallots. One of the activities that farmers can do so that the products marketed can develop is by utilizing ICT technology.

According to Richard Heeks *Information and Communication Technology* (ICT) includes hardware, software, and communication networks used to collect, store, transmit, and analyze data. He also stated that ICT can be used to facilitate social interaction, promote learning, and improve operational efficiency [3]. Advances in all-digital information technology are bringing people into the revolutionary world of business (*digital revolution era*) because it is considered easier, cheaper, practical, and dynamic in communicating and obtaining information. The rapid development of the digital economy in Indonesia is not only caused by the rapid development of the *Information, Communication dan Technology* It is also caused by the number of internet users in Indonesia continues to increase every year. Based on the results of a survey by the Indonesian Internet Service Providers Association (APJII), Indonesia has experienced a fairly drastic increase in the number of internet users [4]. Based on the results of a survey by the Indonesian Internet Service Providers Association (APJII), internet users in Indonesia in 2024 it will reach 221,563,479 people out of a total population of 278,696,200 people in Indonesia in 2023 [5]. In addition, fierce competition occurs in Indonesian society due to their strong interest in getting a job that matches their talents. Along with the development of information media, it can affect consumer behavior [6].

In today's digital era, the use of information and communication technology (ICT) is important for the success of various industries, including agriculture. Marketing strategies based on ICT are considered to be able to overcome various problems faced by shallot farmers. Farmers can increase the competitiveness of their products, reach a wider market, and get more accurate market information by utilizing digital platforms. [7]. The development of ICT technology provides new opportunities for farmers to improve their marketing strategies. ICT also helps farmers access market information in real-time and facilitates communication with consumers. The use of social media platforms such as (*WhatsApp, Instagram and Facebook*) as a tool to market onion products.

By utilizing social media platforms and modern technology, ICT-based marketing can help farmers market their products to previously unreachable areas [8].

Although shallots are a leading commodity, many farmers still rely on traditional marketing methods that are less effective. This is attributed to the fact that farmers have not

fully understood and are able to use ICT technology to market their products. Marketing is very important for businesses, without effective marketing, products will not be known and purchased by customers [9]. Less than optimal marketing causes the income of shallot farmers in Sukomoro Village to not be maximized, thus having an impact on their welfare. Marketing strategies that can help farmers increase sales are marketing innovations [10]. Farmers have the opportunity to sell their goods directly to more people through digital platforms, which can increase awareness and buying interest. This is important to increase the competitiveness of Sukomoro Village shallot products in an increasingly competitive market. In addition, support from various parties also affects the successful implementation of ICT-based marketing strategies. Governments and non-governmental organizations (NGOs) should actively participate in providing training to farmers on the use of technology in marketing. The training is expected to make farmers better understand the benefits of ICT and how to use it [11].

Several studies on the application of ICT-based marketing strategies have been conducted by many researchers before. The research titled "Technology Adoption by Shallot Farmers in East Java" states that many shallot farmers in East Java are able to increase the marketability of their products through online marketing and social media [12]. Then the research with the title "ICT-Based Agricultural Marketing Strategy in Rural Indonesia" states that digital applications, such as *marketplace* and social media help farmers introduce their products to a wider market [13]. Furthermore, the research entitled "Digitalization of Marketing of Shallot Products: Farmers' Perspectives in Indonesia" states that digitalization and the use of platforms *e-commerce* Impact on the marketing of shallot products, with a focus on farmers' perceptions and experiences [14].

By exploring the experiences and challenges faced, it is hoped that this research can provide deeper insight into the potential of ICT and improve the welfare of farmers in the village. This research also aims to provide recommendations for the development of more effective marketing strategies in the agricultural sector. Also to analyze the use of ICT and investigate the extent to which ICT-based marketing strategies affect the increase in the marketability of shallot products in Sukomoro Village, Nganjuk Regency.

1.1. Problem Statement

The problems taken in this study are as follows: 1. How do shallot farmers in Sukomoro Village implement ICT-based marketing strategies? 2. What are the challenges faced by shallot farmers in Sukomoro Village in implementing ICT-based marketing strategies? 3. What are the factors that support the success or failure of the implementation of ICT-based marketing strategies for shallot farmers in Sukomoro Village?

1.2. Research Objectives

The purpose of this research is based on the background and formulation of the research problem. To find out ICT-based marketing strategies by shallot farmers in Sukomoro Village,

To identify the challenges experienced by shallot farmers in the implementation of ICT-based marketing strategies, To find out the supporting factors for success or failure in the implementation of shallot marketing strategies in Sukomoro Village

2. Method

This study uses a descriptive qualitative approach. Data was collected through in-depth interviews with shallot farmers in Sukomoro Village, Nganjuk district, observation of marketing practices being implemented, analysis of documents related to marketing strategies and exploring the experiences of shallot farmers in implementing ICT-based marketing strategies.

The purposive sampling technique was used to select informants who had a deep understanding of marketing strategies and their impact on sales of shallot products in Sukomoro Village, Nganjuk Regency. Data was obtained through several informants, namely the main informant by the head of Sukomoro Village who provided comprehensive information on the understanding of ICT implementation in the marketing of shallots by farmers in Sukomoro Village. The second group or key informant is the main perpetrator, namely shallot farmers who use social media, *marketplaces* (Tokopedia, Shopee, etc. to sell their crops. Meanwhile, the third group or Supporting Informant is someone who can provide additional information to complete the analysis i.e., buyers or customers who buy shallot products through online media.

Table 1. Research informant data

No Name as Informant	
1 Aji Sasono	Village Head who facilitates ICT Main informant
2 Watini	Farmers who have used ICT Key Information
3 Yustina	Buyer through <i>e-commerce</i> Supporting informant

Data triangulation is done by comparing findings from various sources to improve the validity and reliability of the results. Data analysis was carried out through a reduction of analysis from the results of interviews, presentations and conclusions in accordance with the qualitative approach applied in this study, the research time was from August to December.

3. Results and Discussion

In Sukmoro Village, Nganjuk Regency, almost every house works as a shallot farmer. Sukomoro Village itself is a large center of shallot production in Nganjuk Regency, it is not surprising to see many residents planting, drying and trading shallots [2]. Some farmers in

Sukoromo Village still use the old way to market their crops, they still use marketing by selling their crops to middlemen who come to their village and the price is determined by the middlemen. The yield of each farmer is different depending on the quality of the shallots. To be able to compete in a wider market, farmers must implement different marketing strategies. ICT-based marketing strategies are carried out by farmers in order to reach a wider market. This strategy is very important to be able to create a competitive advantage and attract the attention of consumers. To obtain data on ICT-based marketing strategies, interviews were conducted with several sources, namely, the Head of Sukomoro Village, Shallot Farmers, and buyers.

The results of the interview are presented in the table below:

Table 1

Interview results related to ICT-based marketing strategy by the head of Sukomoro village, Nganjuk Regency

Question	Report	Answer	Interpretasi
What is the current condition of shallot farming in Sukoromo village, Nganjuk Regency?	Head of Sukomoro Village	Shallot farming is the backbone of the village economy, but traditional marketing methods limit the potential of farmers. Shallot farming is a leading sector in the village, but in the past, marketing only relied on middlemen	Shallot farming is the backbone of the village economy, but traditional marketing methods limit its potential.
What is the role of the village head in the development of ICT-based marketing for shallot farmers in Sukomoro Village?	Head of Sukomoro Village	We often hold socializations so that farmers want to try new, more modern ways in their marketing and encourage farmers to adapt to ICT-based technology	The village head plays a role as a facilitator in educating farmers to innovate using ICT technology
What support is provided for the use of ICT technology in Sukomoro Village?	Head of Sukomoro Village	We provide basic training/counseling and technological assistance for farmers and work with the government to conduct marketing technology training.	Technology training is the first step for farmers to get to know and use ICT effectively

What are the first steps taken in implementing ICT-based marketing?	Head of Sukomoro Village	We started by providing training to farmers and building awareness of the benefits of technology in modern marketing-based marketing.	The first step in the implementation of ICT was initiated by the village government through training and socialization.
What are the obstacles faced when using ICT for shallot marketing in Sukomoro Village?	Head of Sukomoro Village	Uneven and inadequate internet infrastructure in villages is a major obstacle, and some farmers still find it difficult to use more modern technology.	The first step in the implementation of ICT was initiated by the village government through training and socialization. Farmers are using social media and messaging apps for promotion, while buyers are starting to look for products directly from farmers through digital platforms.
What is the impact felt when implementing ICT-based marketing on product marketability?	Head of Sukomoro Village	What we hope after implementing an ICT-based marketing strategy is that the income of farmers in this village will increase, having a positive impact on the local economy.	The adoption of ICT has a positive impact on the local economy by expanding markets and increasing farmers' incomes.

Table 2
Interview results related to ICT-based marketing strategies by shallot farmers in Sukomoro Village

Question	Report	Answer	Interpretasi
What technologies are used in the marketing of shallots	Shallot farmers	In the past, we could only sell to middlemen, so we	Dependence on middlemen causes the

Why decided to try ICT technology in marketing?	Shallot farmers	couldn't control prices and we were dependent on middlemen and it was difficult to reach new markets.	bargaining position of farmers to be weak.
What are the obstacles faced when using ICT technology?	Shallot farmers	I want to reach a wider market and get a better price so that my products can be known to the public at large	The desire to increase the marketability of the product
What technologies are used in marketing products?	Shallot farmers	Sometimes the signal is difficult and I don't understand the features of new, more advanced and modern features.	Inadequate internet infrastructure and digital literacy are the main challenges.
What are the benefits of using ICT in shallot marketing?	Shallot farmers	WhatsApp and Facebook are often used to promote shallot products and make transactions. The WhatsApp application is most often used because it has features that are easy to use and understand, just send a photo to the buyer and then if you have a deal, immediately make a transaction through e-banking.	The choice of simple technology such as WhatsApp shows farmers' preference for easy-to-use platforms.

What are the challenges that farmers often face when using ICT platforms in marketing their products?

Shallot farmers

The internet signal is weak in some places, and I am not very familiar with some features on social media or apps but I am always learning new features that exist on social media. And what must be watched out for regarding marketing through modern technology like this is fraud. But so far there has been no fraud when selling shallots through social media but we must remain vigilant and careful.

What is the impact felt when implementing ICT-based marketing on product marketability?

Shallot farmers

Changes in income and sales amount, My income is now better, and shallots can be sold faster. Income has increased by approximately 20-30%, I am still grateful and I will develop it even more.

The increase in marketability shows the effectiveness of ICT in helping farmers expand the market and sell faster.

What are the main benefits of this strategy on the sale of shallot products in Sukomoro Village, Nganjuk district?

Shallot farmers

I find it easier to sell shallots now. My income is more stable, and I can reach a wider range of buyers outside of my previous marketing area.

This strategy brings significant changes to the economic welfare of farmers.

What are your expectations regarding the implementation of ICT (*Information,*

Shallot farmers

I hope that there will be further training on new applications and better and adequate internet access in the village so that product marketing in this village is

Communication, an Technology) based marketing strategies in the future ?

more advanced and developed.

Table 3

Interview results related to ICT-based marketing strategies by shallot buyers in Sukomoro Village

Question	Report	Answer	Interpretasi
What changes are felt after access to the purchase of shallots through ICT-based technology?	Shallot buyers	I prefer to order directly from farmers through social media/market places because it is easier to access products directly from farmers.	Technology helps connect farmers with buyers.
What is the perception of some consumers towards the use of ICT technology by farmers?	Shallot buyers	Helping buyers by getting direct products without intermediaries, especially consumers with a distance from shallot farmers in Sukomoro Village and increasing the trust of buyers who shop from farmers because the price is cheaper and the quality is good.	ICT increases buyers' trust in farmers' products due to transparency in transactions and quality.
How does ICT technology affect the price of shallots in the market?	Shallot buyers	The price of shallots is more competitive and I can consider before buying because I can compare some offers directly from farmers	ICT technology makes it easier for buyers from outside the region to access products.
What are the obstacles faced when using ICT for	Shallot buyers	Sometimes communication is hampered because of a	utilizing social media and messaging apps

shallot marketing in Sukomoro Village?			bad signal or the farmer is still slow to respond to my message, usually I order shallots from farmers who have subscribed to me and I trust	for promotion, while buyers start looking for products directly from farmers through digital platforms
What is the impact felt when implementing ICT-based marketing on product marketability?	Shallot buyers		When I was out of town but at that time I needed a large amount of shallots, I could order directly from the farmers in Sukomoro through the application/through WhatsApp messages and then by the farmers and there was no need to come directly there.	ICT technology makes it easier for buyers from outside the region to access products, increasing the market potential of farmers.
What are the main benefits of this strategy on the sale of shallot products in Sukomoro Village, Nganjuk district?	Shallot buyers		Giving me convenience in the selection of products that I will buy and ease of buying and selling/bargaining transactions through social media from farmers without having to go to the market.	Buyers get added value in the form of product convenience and ease of buying

Table 4

The results of the interview related to the expectations given by the informants for ICT-based marketing strategies in the future

Question	Report	Answer	Interpretasi
What are your expectations regarding the implementation of ICT (<i>Information, Communication, and Technology</i>) based marketing strategies in the future ?	Head of Sukomoro Village	Hopefully all farmers can master more sophisticated marketing technology and there will be assistance to improve better internet infrastructure in the village.	.
	Shallot farmers	I hope that there will be further training on new	.

applications and better and adequate internet access in the village so that product marketing in this village is more advanced and developed.

Shallot buyers	Hopefully, farmers who do not understand modern marketing technology will be more tech-savvy so that communication and transactions will be faster and more efficient.
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Data source : Shallot Farming in Sukomoro Village, Nganjuk Regency

Discussion

Based on the interview table above, it was found that:

1. ICT-based marketing strategy by shallot farmers in Sukomoro Village

Shallot farming is a leading sector and economic support for the people of Sukomoro Village, Nganjuk Regency. However, traditional marketing methods that still rely on middlemen limit the potential and market share of farmers. This condition makes the bargaining position of farmers weak, motivating them to look for more effective, modern and profitable marketing alternatives. Before the existence of ICT-based technology, farmers only relied on marketing their products through middlemen. This makes it difficult for farmers to determine a fair price and difficult to reach a wider new market. Traditional marketing systems are also still a barrier and obstacle for farmers to expand their marketing reach and increase their income. Since the implementation of ICT-based marketing technology such as social media and *marketplaces* , it has brought significant changes to the shallot marketing system in Sukomoro Village. ICT technology helps farmers connect directly with buyers without intermediaries so that they can set prices directly as revealed in interviews, buyers prefer to order directly from farmers because the process is more practical.

The Head of Sukomoro Village has an important role as a facilitator and supporter in the development of ICT-based marketing. He also often holds socializations to educate farmers about the importance of adapting modern technology. In addition, the village head encouraged farmers to utilize ICT-based technology so that they can innovate with modern and advanced technology and increase competitiveness in the market. Farmers want to

increase the marketability of their products and reach a wider market. They hope that the use of ICT-based technology will help them obtain better selling prices and make their products more known to the public. Research conducted by Putra in 2023 with the title "Utilization *E-Commerce* in Agricultural Product Marketing: Advantages and Challenges in the Digital Era" shows that platforms such as *marketplace* Improve Marketing Efficiency [15]. Farmers can sell directly to consumers thereby reducing their dependence on intermediaries. Shallot farmers in Sukomoro Village use technology to market their products using a simple platform and have quite easy-to-use features such as WhatsApp and Facebook. WhatsApp has become popular because of its easy-to-use features, such as negotiating directly with buyers and sending product photos. Furthermore, e-banking is usually used to make transactions, which makes the process easier, faster and more efficient. Farmers who use ICT technology increase consumer confidence in shallot products. Consumers feel more comfortable because they can buy products directly from farmers without going through intermediaries, which results in more competitive prices and more guaranteed product quality. In addition, customers who live far away also find it helpful by the ease of using the online platform.

2. Challenges faced by shallot farmers in implementing ICT-based marketing strategies

Most of the farmers in Sukomoro Village come from the middle to upper age group who are not used to adapting to using digital device technology. The limitations in the use of this technology cause many of them to find it difficult to access online marketing applications, social media, and *platform e-commerce*, so that it requires further training to improve their abilities. Before the use of ICT technology in marketing, farmers used the old way to market their products and this method was less effective in increasing the marketability of their products. Low knowledge also continues to be a major obstacle in optimizing the use of this platform, this finding is in line with this researcher in terms of technology literacy challenges.

Although the adoption of ICT technology has many advantages, there are some problems with the internet infrastructure. The main obstacle in Sukomoro Village is an uneven and often weak internet connection. Digital Literacy: Some farmers still have trouble understanding new features in applications or social media. They are constantly learning, and it takes time. Risk of Fraud: Although there have been no cases yet, farmers should remain vigilant and cautious when making digital transactions. For consumers, the main problem is communication that is sometimes hampered due to poor signals or slow responses from farmers. However, buyers tend to trust subscription farmers more.

The Head of Sukomoro Village said that ICT technology is expected to increase farmers' income and have a positive impact on the local economy. Research conducted by Indiarto in 2020 entitled "The Utilization of Information Technology in the Marketing of Food and Agricultural Products in Asia" shows that the use of information technology such as social

media helps farmers reach a wider market and increase product stability [16]. This research also highlights the constraints of human resource literacy that have not been maximized in the use of information technology. Research conducted by Indiarto in 2020 entitled "The Utilization of Information Technology in the Marketing of Food and Agricultural Products in Asia" shows that the use of information technology such as social media helps farmers reach a wider market and increase product stability [16]. This research also highlights the constraints of human resource literacy that have not been maximized in the use of information technology.

3. Supporting factors for success or failure in the implementation of ICT-based marketing strategies

When ICT-Based Marketing Strategies Are Used, the Effect on the Selling Power of Shallot Products in Sukomoro Village Increases the sales of shallot products significantly. The Head of Sukomoro Village said that ICT technology is expected to increase farmers' income and have a positive impact on the local economy. This technology has proven effective in expanding markets, allowing farmers to sell their products faster, and increasing their market potential beyond the region. Shallot farmers also experienced an increase in income of about twenty to thirty percent and a faster increase in sales. This technology allows buyers to get shallot products from far outside the area, without having to go to Sukomoro Village directly. Technologies like WhatsApp speed up transactions and strengthen the relationship between farmers and buyers.

Key Benefits of ICT-Based Marketing Strategies: Farmers and buyers are experiencing many benefits from the implementation of ICT. The Sukomoro Village Chief emphasized that this strategy allows farmers to become more independent in selling their goods, reduce their dependence on middlemen, and significantly increase their income. Farmers now have the ability to set their own selling prices and reach a wider market, which results in better income stability. For buyers, this strategy offers many advantages, such as ease of choosing products, price transparency, and ease of buying and selling transactions through social media. They also feel more comfortable communicating directly with farmers than through intermediaries or conventional markets, which often require more time and money. When farmers try to enter online platforms, they have to compete with other business actors who have already mastered the digital market, both in terms of branding, product photos, and promotional techniques. This makes small farmers from the village feel less confident or even not get the expected results.

Although there have been training initiatives on the use of ICT in marketing from local governments or NGOs, these activities are often one-time and not followed by mentoring. This causes farmers difficulties when facing technical obstacles in their practice. Support for the use of ICT technology in Sukomoro Village by the village government, providing support in the form of basic technology training, modern marketing counseling, and technological device assistance. This step aims to increase the digital

literacy of farmers so that they can utilize ICT technology effectively and efficiently, and this training is an important first step in the application of ICT-based marketing technology. By utilizing social media and messaging apps, farmers are starting to promote their products more widely, while buyers are starting to take advantage of these platforms to search for products directly from farmers. The influence of ICT technology on the price of shallots ICT technology helps create stability in the price of shallots because farmers have greater control over the selling price

Research conducted by Yuniarti in 2020 entitled "The Effect of Information Technology on the Price and Competitiveness of Horticultural Products" shows that information technology increases the competitiveness of horticultural products because farmers can set selling prices more appropriately and strengthen direct relationships with buyers [17].

4. Conclusion

Based on the results of the study, it was concluded that the implementation of ICT-based marketing strategies has changed the distribution system and competitiveness of farmers' products. Previously, dependence on middlemen weakened farmers' bargaining positions, restricted market access, and reduced farmers' profits. However, farmers can now market their products directly to end consumers by leveraging platforms such as WhatsApp, Facebook, and e-banking. Using this strategy, farmers can more freely determine the selling price of their own products, reduce dependence on middlemen, and increase income by between 20 and 30 percent. In addition, buyers can easily get products directly from farmers with guaranteed quality and competitive prices.

The challenges faced by shallot farmers are also one of the obstacles in the implementation of this ICT-based marketing strategy, such as the ineffectiveness in the use of internet infrastructure evenly in the village. In addition, farmers' lack of digital literacy prevents them from mastering advanced technological features. The development of a more efficient digital-based training system or the investigation of new marketing platforms that better suit the needs of farmers may be the subject of future research. In addition, additional research agendas to expand the impact of this research may include the influence of ICT on the competitiveness of agricultural products in domestic and international markets.

The success or failure factor in the implementation of this ICT-based marketing strategy is inseparable from the active support of the Head of Sukomoro Village in the form of education and socialization plays a very important role in accelerating the adoption of this technology. In addition to expanding market reach, the use of ICT allows farmers to set fairer prices, build consumer trust, and create more transparent trade relationships. However, challenges such as low digital literacy and limited infrastructure still need to be overcome so that ICT-based marketing strategies can be implemented evenly and sustainably. Policies that can be implemented by local governments such as more efficient

digital-based training or the investigation of new marketing platforms that are more in line with the needs of farmers may be the subject of future research. In addition, additional research agendas to expand the impact of this research may include the influence of ICT on the competitiveness of agricultural products in domestic and international markets.

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