

# The Effect of Implementing Web Push Notification and Customer Relationship Management in E-Commerce of Silver Craft MSME

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## ABSTRACT

Kameswara Silver is a micro small and medium enterprises (MSME) in the silver handicraft industry. During its operation, Kameswara Silver only accepts purchases from abroad through colleagues from the company's owners with products manually, not regulated by the system, or computerized, and the company has difficulty getting new customers. To change the manual system to become computerized and get more customers, an e-commerce website was created using the Customer Relationship Management method and Push Notification feature. To find out the response from customers, a survey was conducted after the Push Notification feature was implemented, the result was that 85% of customers liked the features implemented by the company, product sales and revenue increased.

**Keywords:** *Customer Relationship Management, e-commerce, Kameswara Silver, Push Notification*

## INTRODUCTION

Digital economic potential through e-commerce business has the opportunity to develop in Indonesia. With a population of more than 250 million people, Indonesia is demanded to become a digital economy business player on the world stage. Moreover, e-marketer data from digital market research institutions say the number of internet users in Indonesia continues to grow every year. In 2013, the number of internet users was 72.8 million, which then rose to 102.8 million in 2016. In 2017, Indonesian internet users were predicted to reach 112.6 million. Indonesia ranks the 6th most internet users in the world. Even Indonesia overtook Japan to rank fifth in 2017. With the growth of internet users, Bank Indonesia estimates there are 24.7 million people who shop online. The value of e-commerce transactions is predicted to reach Rp. One hundred forty-four trillion in 2018, up from Rp. 69.8 trillion in 2016 and Rp. 25 trillion in 2014 [1].

Kameswara Silver is a company engaged in the silver handicraft industry, for more than 10 years marketing silver handicraft products manually there are several obstacles faced, such as difficulties in getting new customers due to lack of promotion, then the number of competitors that have sprung up, diminished interest, and want to computerize a system that was previously done manually. Seeing some of the constraints faced by the company, of making website e-commerce with the method of Customer Relationship Management felt to be the appropriate solution. By implementing the Customer Relationship Management method in e-commerce that is created is expected to help companies maintain relationships with customers. Customer Relationship Management is an information technology industry term for methodologies, strategies, software, or website -based applications that can help companies manage their relationships with customers.

To retain customers, a push notification feature will also be available [2], so that customers are kept informed of the latest products, or information about discounts on a product. Also, the Customer Relationship Management method will be used to measure customer behavior after the push notification feature is implemented.

They are applying the Customer Relationship Management method in e-commerce that is made to see customer behavior as well so that the company can provide the right product information for customers as well as by applying push notification technology so that customers are always informed about the latest products or discounts on the purchase of a silver product — comparing the response of customers using the Customer Relationship Management after technology push notification applied to the website e-commerce. The expected benefits if we are applying push notification technology and Customer Relationship Management will improve the quality of company services to customers, knowing what products are being interested in customers, make the company get new customers with a broader area coverage, and to help boost the country's economy through micro small and medium enterprises.

## E-COMMERCE, PUSH NOTIFICATION, CUSTOMER RELATIONSHIP MANAGEMENT, MICRO SMALL AND MEDIUM ENTERPRISES

### *E-Commerce*

According to Onno w. Purbo and Aang Arif Wahyudi, in their book entitled *Knowing e-Commerce* to describe e-commerce as a broad scope of technology, processes, and practices that can conduct business transactions without using paper as a means of transaction mechanism. This can

be done in various ways, such as by e-mail or through the World Wide Web. In general, David Baum, quoted by Onno w. Purbo and Aang Arif Wahyudi "E-commerce is a dynamic set of technologies, applications, and business processes that link businesses, consumer and communication through electronic transactions and the electronic exchange of goods, services, and information". E-commerce is a dynamic set of technologies, applications, and business processes that connect individual companies, consumers, and communities through electronic transactions and the electronic trade in goods, services, and information [3].

The Association for Electronic Commerce defines e-commerce as an electronic business mechanism. CommerceNet, an industrial consortium, provides a complete definition of the use of computer networks as a means of creating business relationships. Not satisfied with this definition, CommerceNet added that in e-commerce, there was a process of buying and selling services or products between two parties via the internet or the exchange and distribution of information between two parties in one company using the internet. Meanwhile Amir Hatman in his book *Net Ready: Strategies for Success in the e-Conomy* in more detail defines e-commerce as an electronic business mechanism that focuses on individual-based business transactions using the internet as a medium for exchanging goods or services both between two institutions (Business to business) as well as between institutions and direct consumers (Business to Consumer) [4].

### ***Customer Relationship Management***

The Customer Relationship Management component framework is classified into three; namely, Operational Customer Relationship Management includes integrated automation process of the entire business processes, such as marketing automation, and service. Analytical Customer Relationship Management is instrumental in understanding the needs of customers, instrumental in carrying out the analysis of customers and markets, such as the analysis of market trends and analysis of the needs and behaviors of customers. Collaborative Customer Relationship Management, the main goal is to provide added value and expand customer loyalty to other customers who are still not at the level of customer loyalty. Collaborative Customer Relationship Management also includes an understanding or awareness that customers loyal can be a magnet for customers other [5].

According to Kalakota and Robinson [6], Customer Relationship Management consists of the following phases:

1. Get new customers (Acquire): New customers are obtained by providing easy access to information, innovations, and attractive services.
2. Increase the value of customers (Enhance): The company seeks to establish relationships with customers by providing excellent service to the customers of its (customer service).
3. Retain existing customers (Retain): Retain customers who provide benefits, by offering what is needed by specific customers not needed by market customers, because the value of the product or service for customers is the proactive value that best suits their needs.

The company's focus now is on how to retain existing customers, providing benefits for the company rather than how to get new customers that are not necessarily profitable.

### ***Push Notification***

Push notification is a short message that appears automatically on the smartphone screen. The application or website owner can send these messages at any time, even if the user is not opening the application or website in question. There is much information sent through push notifications, for example, information on sports results, asking users to do things like download discount coupons, information about exciting events such as sale at a mall, and much more.

Push notification provides convenience to the user of the application or website in the form of new information and by user needs — messages sent to application users or websites in the form of information that is useful for users. Customers must get information directly and up to date by utilizing and using real-time communication using Web Socket [7], [8].

### ***Micro Small and Medium Enterprises***

Criteria for Micro Business group is a productive business owned by individuals or an individual business entity that meets the criteria for Micro Business as stipulated in this Law.

Small Business Criteria Is a productive economic business that stands alone, which is carried out by individuals or business entities that are not subsidiaries or non-branch companies that are owned, controlled, or become a part either directly or indirectly of medium-sized businesses or large businesses that meet the criteria Small Business as referred to in this Act.

"Medium Business is a productive economic business that stands alone, which is carried out by individuals or business entities that are not subsidiaries or branch companies that are owned, controlled or become a part either directly or indirectly with small or large businesses with a net worth or yield annual sales as stipulated in this law."

Criteria for Micro, Small and Medium Enterprises that have been stipulated in article 6 of Law Number 20 of 2008 concerning Micro, Small and Medium Enterprises, namely: Criteria for Micro Business are Having a net asset of no more than Rp 50,000,000 (fifty million rupiahs), including land and buildings for business premises, or; have annual sales results of at most Rp. 300,00 0,000 (three hundred million rupiah).

Small Business Criteria are has a net asset of more than Rp 50,000,000 (fifty million rupiahs up to a maximum of Rp500,000,000.00 (five hundred million rupiahs) excluding land and buildings for businesses; or has annual sales results of more than Rp. 300,000,000.00 (three hundred million rupiahs) up to a maximum of Rp. 2,500,000,000.00 (two billion five hundred million rupiahs).

Medium Business Criteria are possessed net assets of more than Rp 50,000,000 (fifty million rupiahs) up to a maximum of Rp 500,000,000.00 (five hundred million rupiahs) excluding land and buildings for business premises, or has annual sales results of more than Rp.

300,000,000.00 (three hundred million rupiahs) up to a maximum of Rp. 2,500,000,000.00 (two billion five hundred million rupiahs) [9].

**Related Research**

Research related to the Implementation of Push Notification and Customer Relationship Management include:

- a. Implementation of Customer Relationship Management by adjusting existing transaction data, to calculate the value of support, lifts, and confidence obtained by filtering transactions that began since the first item was selected [10].
- b. The applied Customer Relationship Management is used for information on marketed products, purchase transactions, delivery of criticisms, suggestions, and questions from customers [11].
- c. The website with Customer Relationship Management is made to facilitate the company's interaction with clients or customers [12].
- d. Desktop applications are made to make it easy for shipping companies to manage master data, airway bills manifest, invoices, and shipment status. The website is made to make it easy for customers to get information on the status of goods sent. System e-CRM is used in applications desktop using a browser that does not require other software and systems connected online to the website of the company [13].
- e. E-commerce that handles the process of selling, marketing, and ordering goods from Dolanan Puzzle. Implementation of Customer Relationship Management is realized in the form of product recommendations that are often bought by other customers when buying an item [14].
- f. The push notification feature will be implemented to provide information to students regarding lecture schedule information [15].
- g. Mobile commerce that utilizes GCM technology in its application makes it easy for customers to make the process of buying and selling online. Sending notification messages or short messages about transactions that occur also makes it easier for buyers to know the transaction process of the transaction because the message will be sent when the transaction is completed [16].

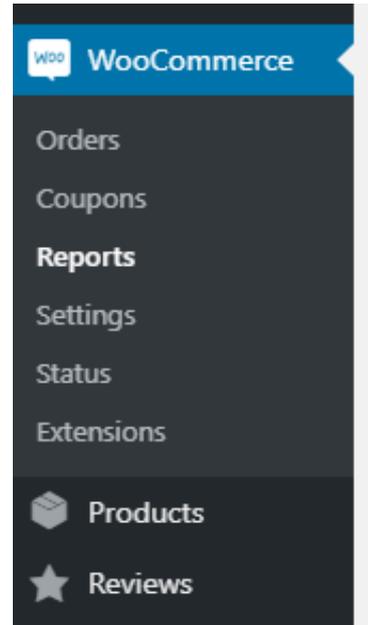
**IMPLEMENTATION OF PUSH NOTIFICATION, CUSTOMER RELATIONSHIP MANAGEMENT IN SILVER CRAFT MICRO SMALL AND MEDIUM ENTERPRISES**

**Implementation of Customer Relationship Management**

Plugin Woocommerce will be automatically installed on the website. The plugin manages everything related to customer data, product data, financial data, discount coupons, and other matters relating to company and customer relations. Order menu displays all the data of

customers who buy products; in this menu, the admin has full power to alter the transaction from the customer whether it has completed the settlement of payment or is still waiting.

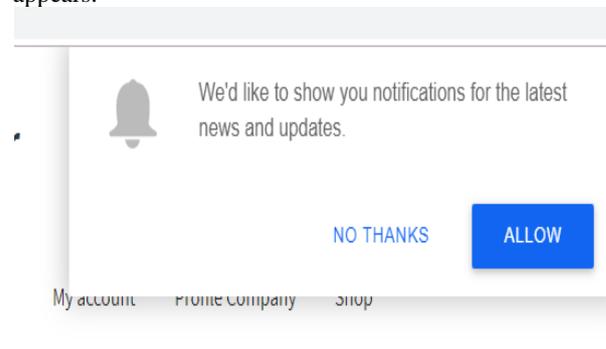
In the coupons menu, the admin can create discount coupons that can be discounted according to category or discount by percentage. Furthermore, in the reports menu, the admin can see sales reports from the beginning until the end, from the average income to the number of products sold. In the settings menu, the admin can manage contact and company addresses, transfer accounts, and settings for customers.



**Figure 1.** Woocommerce Menu.

**Application of Push Notification**

Push notifications that are implemented using the OneSignal Push Notification plugin after installing and activating the admin plugin can inform customers about the latest information about products, customer surveys, or discount coupons. The push notification display when appears.



**Figure 2.** Push Notification.

If approved, a subscribe screen will appear, as shown in Figure 5.

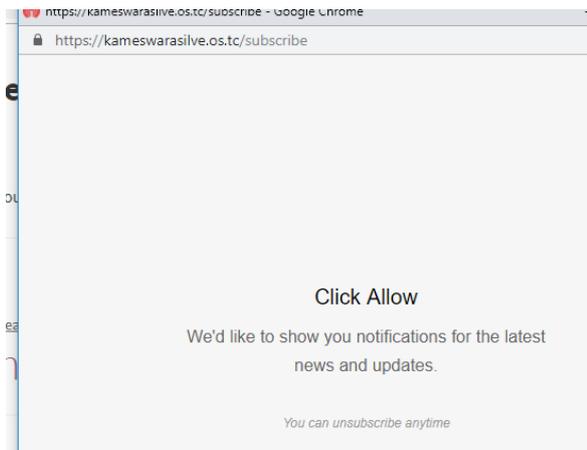


Figure 3. Allow Push Notification.

After activating the notification, the website will automatically give notice like in picture 4.

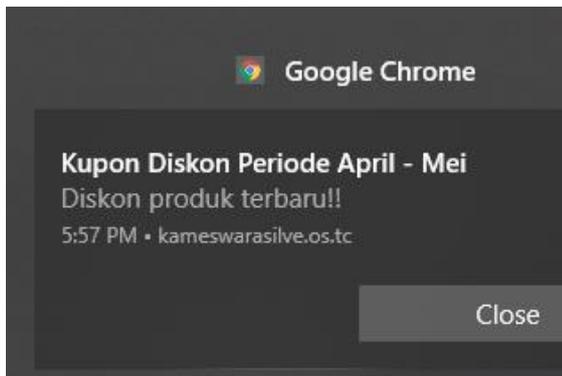


Figure 4. Notification.

### Product Sales Comparison

Furthermore, statistics on total goods sales from December 2018 to April 2019 total sales reached Rp. 16,782,260 -, it can be seen that sales until April continued to increase, from sales which in December 2018 the highest number of sales reached only Rp. 4,840,000, - in April 2019 it reached Rp. 11,942,480 - the difference in income reached Rp. 7,102,480.

Whereas when the company was still selling manually, revenue in the 4 months only reached approximately Rp. 7.000.000, - so it is a quite apparent difference in revenue before selling system and after computerized.

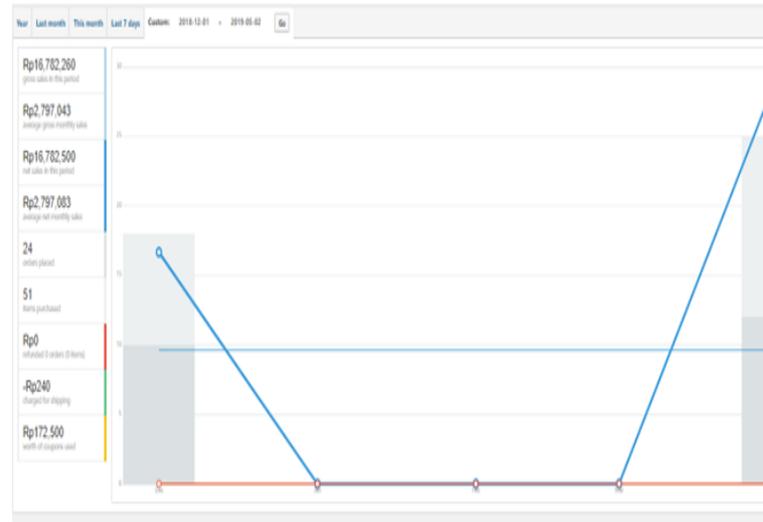


Figure 5. Comparison of product sales.

### Customer Satisfaction Survey

Figure 6 is the result of a survey that is filled directly by the buyer after making a transaction, using the Quizzes/Surveys plugin from Wordpress. In the resulting menu, we can already see the results of the score from the survey conducted, also the time required to complete the survey.

Of the seven questions given to customers, two questions related to the application of push notification on the website of 12 customers who filled out the survey only four customers were not satisfied with the push notification feature applied while eight customers were satisfied with the push notification feature.

Of the 12 customers who filled out the survey, 4 customers said they were delighted with the service and appearance on the website so that the survey results showed 100%, then 4 customers who were quite satisfied with the service and website appearance of the survey results showed a range of 71% to 85%, and 2 unsatisfied customers survey results show 14% and 2 customers who are not very satisfied with the look and service website gives the number 0.

Actions	Quiz Name	Score	Time To Complete	Name	Business	Email	Phone	User	Time Taken
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	7 out of 7 or 100%	2 minutes 2 seconds	None	None	None	None	2	04/20/2019 04:50:08 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	7 out of 7 or 100%	2 minutes 11 seconds	None	None	None	None	22	04/15/2019 12:06:07 AM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	1 out of 7 or 14%	1 minutes 9 seconds	None	None	None	None	29	04/15/2019 12:02:11 AM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	7 out of 7 or 100%	2 minutes 12 seconds	None	None	None	None	59	04/14/2019 11:53:30 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	1 out of 7 or 14%	1 minutes 2 seconds	None	None	None	None	19	04/14/2019 11:13:53 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	6 out of 7 or 85%	2 minutes 1 seconds	None	None	None	None	18	04/14/2019 10:20:18 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	6 out of 7 or 85%	1 minutes 59 seconds	None	None	None	None	17	04/14/2019 10:08:54 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	6 out of 7 or 85%	2 minutes 11 seconds	None	None	None	None	16	04/14/2019 07:08:07 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	7 out of 7 or 100%	2 minutes 9 seconds	None	None	None	None	1	04/14/2019 06:20:35 PM
<a href="#">View</a> <a href="#">Delete</a>	Survey Kepuasan Pelanggan	5 out of 7 or 71%	2 minutes 32 seconds	None	None	None	None	14	04/14/2019 05:38:39 PM

Figure 6. Customer Satisfaction Survey.

## CONCLUSIONS

The application of push notification and the Customer Relationship Management method on the Kameswara Silver e-commerce website have had an entirely positive impact on increased sales and website visitors after the push notification feature was applied. The results of a survey conducted to customers were quite positive with the results obtained showed that the customer was quite satisfied with the appearance and services provided by the company. As many as 85 % of customers are satisfied with the push notification feature implemented on the website. Website development can continue to be done by adding other features to keep existing customers, such as providing flash sales for customers who have made several transactions, or companies can launch new products or categories that attract customers and get new customers. Companies can also advertise websites through social media platforms that are already widely available to further enhance promotion.

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