

# Effectiveness of Payment Gateway in E-Commerce

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**Abstract.** The purpose of this research is to find out how the benefits of doing transactions by gateway payments in e-commerce for sellers and buyers. In this discussion, the authors used the research method from the journal and images to explain the working mechanism of the payment gateway. The results of this research stated that making transactions through payment gateways buyers can feel the ease and security of transactions and for sellers quickly and safely in making mass transactions. This is because Payment Gateway requests are made simultaneously. The conclusion of this study is to find out the benefits and working mechanism of payment for buyers and sellers.

**Keyword :** *E-commerce, payment, Online Store.*

## 1 Introduction

Gateway is an electronic payment network that connects buyers and sellers; payment gateways are designed to be multi-threaded and will be able to handle multiple requests simultaneously.[1] In general, someone goes to the store, buys goods, and pays to the cashier or the shopkeeper, face to face [2]. The internet makes it easy for everyone to find the information they need. Means of accessing science and technology are very fast, increasing efficiency, and effectiveness for the creative software industry, such as online buying and selling processes and online payments.[3]

There are currently many studies on payment gateways, Cramer DM, & Elchones, D. A describes the gateway payment systems and methods for purchasing and shipping between buyers and sellers while in this research will explain how easy it is for payment gateway transactions and working system mechanisms.[4] Research with the title E-Commerce and Social Media Business Today. Soegoto and Eliana explained that E-commerce is a series of technologies that are connected between consumers through electronic transactions. However, the authors explain in more detail about online transactions in e-commerce, that is, a system called a payment gateway. [5] Karns et al. with a research entitled Electronic payment systems. Check payment collections and transaction tools by providing representation of user information and transactions through machine-readable indicia. However, we examine the workings of online transactions and the convenience that sellers and buyers will get.[6] Wankmueller explained about how methods and systems for using physical payment cards in secure e-commerce transactions, to discover how payment methods and systems use physical cards. However, we researched the mechanism and benefits of transacting through a payment gateway, no longer using a physical card. [7] With the title, System, method, and computer product program for providing location-based services and mobile e-commerce. Barnes Jr, M. L, discusses global factors, environment, and key policies that act as determinants of e-commerce diffusion. One of the determinants of the diffusion of e-commerce is the convenience of consumers in transacting, and we find one solution to facilitate consumers to transact, that is, with a payment gateway, consumers can make payments without having to face the buyer, and transactions can be done anywhere and safely.[8] In his book, Kou, W discusses the main subject related to electronic payments such as public key infrastructure, smart cards, payment agents, digital money, SET protocols, and micropayments. However, we

will explain the current payment, that is, the payment gateway, which offers easy and safe transactions and even transactions.[9] Mobile E-commerce is a new e-commerce branch and the new form of development of e-commerce. However, due to constraints in the development of mobile e-commerce payment security problem has not been solved, mobile e-commerce applications are still on the surface. Because of this, Jiang, H in his paper examines security transaction modes from the view of e-commerce. As well, this research will discuss security in payment gateway transactions. Based on this problem, both papers discuss payment security systems.[10].

In the previous research, various types of Online Payments in e-commerce, payment security, and researching payment instruments have discussed. However, from previous research, it was not clear how the benefits of online payment were for buyers and sellers. Therefore, in this paper, the authors will explain how the payment gateway mechanism and its role in e-commerce and how the benefits for buyers and sellers. In this study, we used the method of researching journals, articles and explaining the mechanism of work with images, and taking the example of e-commerce buying and selling sites that used payment gateways. Then, the purpose of this research was to produce information about payment gateways.

## 2 Material and Methods

This research used descriptive methods in research journals, articles, and explaining the mechanism of work with images, and taking examples of e-commerce sales and purchase sites that use payment gateways.

## 3 Results and Discussion

This section presents several simulation results such as power from the input side, inverter output side, power from the load side, efficiency and THD. Each simulation has different parameters, so in this case, we will display one by one the parameters used.

### A. Payment Gateway

The payment gateway is a system that authorizes the payment process from the buyer to the seller. Usually, the payment gateway is used by trusted online stores. Because to use a payment gateway service would require special conditions that cannot be fulfilled by any online store. Thus, online stores that use payment gateway facilities can be ascertained to be trusted online stores, so buyers do not have to worry about transacting shown in Fig.1.

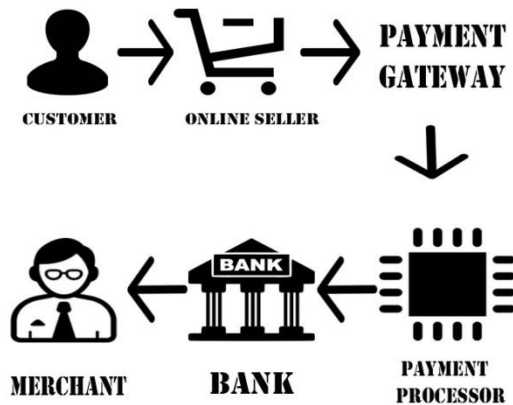


Fig 1. Payment Gateway.

This discovery has an electronic payment handling method, including receiving electronic payment requests for transactions from users on the payment device and directing payment requests to the payment gateway, identifying users at the payment gateway, and routing payment requests to one of several payment networks.

#### B. Payment Gateway working mechanism

Gateway has a systematic flow, as shown in Figure 2:



**Fig 2.** Payment gateway flow.

As an intermediary for e-commerce websites with safe and sophisticated bank traders, payment gateways have the following standard working mechanisms: Customers will see and choose a product based on information from the seller or source of the Payment Gateway; After choosing one payment, the payment processor will work and; The payment processor forwards information to the card issuer association used; The next step, the related bank will receive this request and send a reply to the processor with a special code and confirm whether the transaction was successful or failed; The payment processor will send the message to the payment gateway, then it will be forwarded to the Seller website and the cardholder until the transaction is declared successful and; The seller can accept transactions from the buyer.

#### C. Standard Security System in the Payment Gateway

Online transactions are vulnerable to threats of online fraud or customer data theft. To anticipate things that are not desirable, the payment gateway has a standard security system procedure to protect customer transactions, through three systems: Address Verification System (AVS). Through this tool, customer billing details will be checked and completed with a registered card address; Card Security Code (CV2); Each customer transaction process will be asked to enter the last three digits behind the debit or credit card; 3D Secure Password used as a tool to authorize payments; The security process above will be carried out by the Payment Gateway, so that customer transactions are safe and smooth.

#### D. Role of Payment gateways in E-commerce

Many business people make Stores Online complete their Offline Shop. Online Stores makes businesses get the benefits they do not get in offline stores. Also, customers will find it easy at the Online Store, without the need to go out to buy products, customers only need to open their cellphones and internet. Every online transaction involves one or various banks. In order for the transaction to run safely and conveniently, the server that connects the site with the bank is needed. Therefore, Payment Gateway is a server that can connect sites with banks. Put, the payment gateway functions by providing a secure network that connects a site with a bank. When credit card information is entered into the shopping site, the payment gateway system will receive information and send it to the bank concerned for verification. Then the bank will respond to the payment gateway server whether credit card information is accepted or rejected. Then the payment gateway forwards it to the shopping site so that the person who

is shopping will receive a confirmation message stating whether the payment was successful or not.

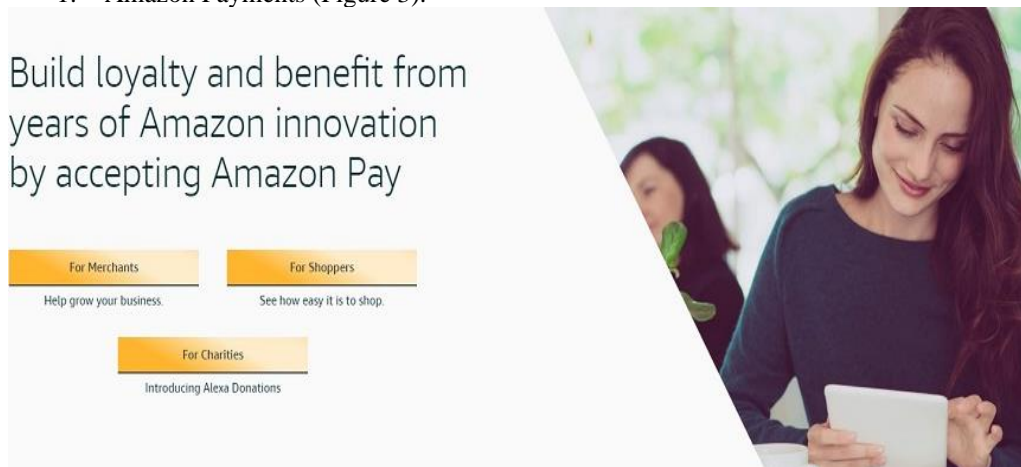
#### *E. Benefits of Payment Gateway*

There are several benefits that will be obtained by the Seller, who has an Online Store, which has a Payment Gateway facility, namely: The sellers will have a trusted impression in the eyes of consumers. If the seller already has it, then the presence of a payment gateway will further strengthen that impression; Online stores no longer need to provide many accounts from various banks. By having a payment gateway facility, online stores only have one account from one bank. Because, payment gateways can receive funds transfers from various bank accounts and channel to one account owned by an online store; Seller can receive payments via credit card, direct debit, e-wallet, and Bank transfer; A payment gateway can process hundreds to thousands of transactions in a concise time; In the sales reconciliation process, such as sales reports, customer details, voids, and refund transactions. So the customer do not have to bother with the reconciliation process specifically for credit card transactions, payment gateways have fraud detection technology that serves to prevent fraudulent payments at the seller's store. As for some of the benefits that customers will get by using the payment gateway facility, namely; transactions can be carried out safely so that the confidentiality of data and information about consumers is maintained; Ease of transactions, customers can buy the desired item by just pressing a few buttons; Online stores and payment gateway systems allow customers to shop freely whenever they want without fear of closing the store.

#### *F. Channel Payment Gateway*

The following are some famous channels that use Payment Gateways:

1. Amazon Payments (Figure 3).



**Fig 3.** Amazon. The figure was adopted from [www.amazon.com](http://www.amazon.com) . On Dec 10th,2018.

Amazon payment is the best payment for small businesses and leads in response. More than 60 per cent of mobile users makes purchases using online from their smartphone devices.

## 2. WePay

In Figure 4, explain about WePay:

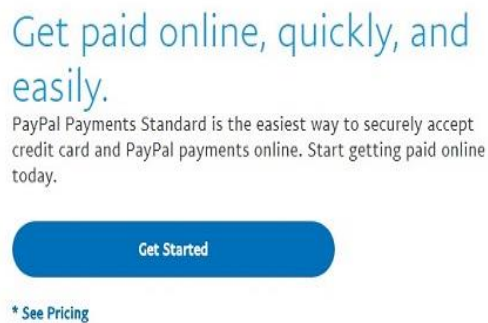


**Fig 4.** WePay Figure was adopted from www.WePay.com. On Dec 10th,2018.

WePay has international as well as domestic customers. It helps support centres for businesses using Payment gateway. We have been built to process payments without friction and fraud.

## 3. Paypal Payment Standard

In Figure 5, explain about Payment Standard :

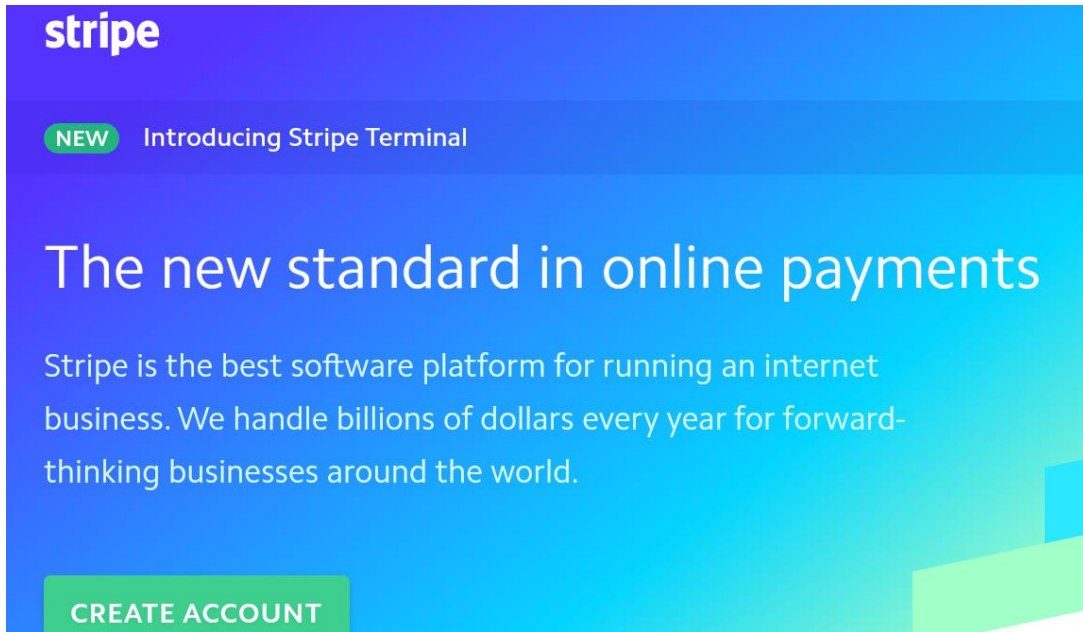


**Fig 5.** Paypal Payment Standard Figure was adopted from www.PayPal.com . On Dec 10th,2018Single-Phase Inverter with Transformer Model.

They provide and offer the customer several versions of their payment solutions, such as PayPal Pro Payments, PayPal Express Checkout, and Braintree to develop local businesses and high traffic businesses.

## 4. Stripe

In Figure 6, explain about Payment Standard :

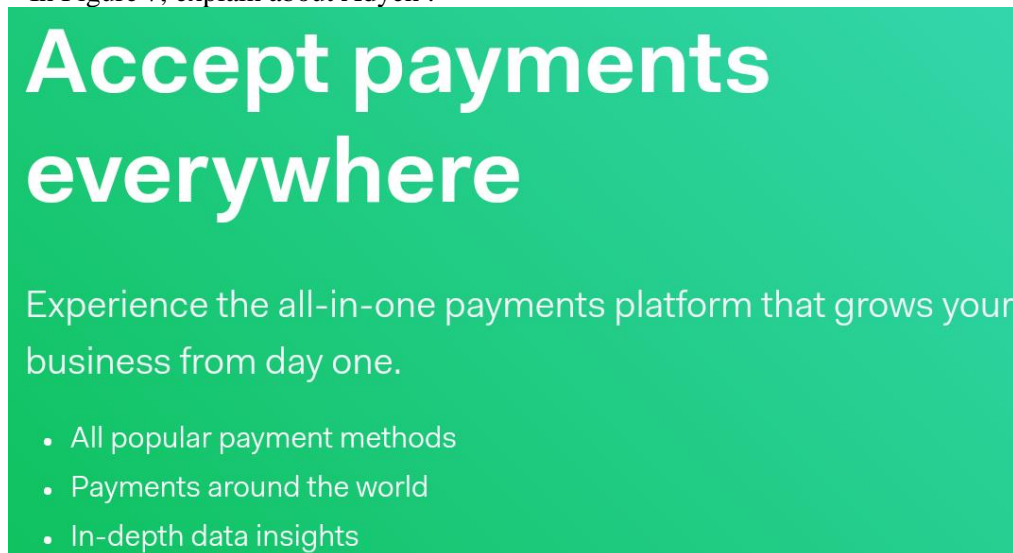


**Fig 6.** Stripe Figure was adopted from [www.stripe.com](http://www.stripe.com). On Dec 10th,2018.

Topping our list is Stripe, an online payment platform that was created by industry experts who have established a partnership with the broader payments industry: from expected partners local banks, major card networks, the PCI Council to the unexpected the W3C, internet browser providers, and industry associations.

5. Adyen

In Figure 7, explain about Adyen :



**Fig 7.** Adyen Figure was adopted from [www.adyen.com](http://www.adyen.com) . On Dec 10th,2018.

Adyen is a popular, open-source payment solution whose infrastructure meets the highest standards of security, integrity and stability. At the same time, the platform's redundant and stateless service-oriented architecture (SOA).[11] Ensures maximal uptime, and enables users to accept payments on several physical hosting locations. Another unique point is the special SLA reports that will help the customer keep the transactions under control.

## 4 Conclusion

The increasingly widespread online business, making its users get many benefits. Various technologies are created to be able to compete in the business world. The presence of gateway payment technology with various advantages for sellers and buyers is rapidly changing the direction of online business. The mechanism that carries out the automatic all-rounder makes it easy for those who transact in conducting online transactions. With the available convenience, interested people increasingly add and make payment gateways a common way to transact in the future.

## Acknowledgements

With the completion of this research, the authors would like to thanks to the Universitas Komputer Indonesia for supporting the research process so that this paper can be completed smoothly.

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