

# Content Management Systems to Development E-Commerce Websites: OpenCart Case Study

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## Abstract

Multiplicity of benefits of e-commerce and its growth worldwide through increased international trade and economic growth, as the era of globalization spread, it has led to the transition from an industrial to a global digital economy. In recent years, e-commerce has proved to be the most promising applications in information technology, e-commerce is based on existing business-to-consumer activities as well as on e-marketing. With the spread of the sale and purchase of goods and services on the Internet, and with their growth, what is known as commercial business has been created in e-commerce field. With the dramatic development of e-commerce, the number of content management systems and e-commerce systems has increased. Content management systems (CMS) are used to create a dynamic Web site and are an administrative tool that includes logical structure to manage data, organize content, and easily access it, content management systems offer many basic needs that help to develop and manage websites and programs, It can be used to add and edit the contents of websites, the department, organization and dissemination of a large number of documents and many other web site content, OpenCart is one of the best content management systems in e-commerce field. In this study, a platform for electronic commerce will be discussed and prepared using OpenCart to do an online business activities, advertising, promotions and marketing, e-commerce is an effective to reach customers worldwide, customers can shop online at any time, from anywhere and maintain their privacy, and thus, overcome the barriers of traditional trade.

**Keywords:** E-Commerce, OpenCart, Open source CMS

## 1. Introduction

With the tremendous development of technology, the progress and growth of electronic commerce around the world has increased, and with increased economic growth and international trade, e-commerce is emerging as a global phenomenon and has a significant impact on economic and social life worldwide. The Internet is an effective tool for commercial purposes, and e-commerce sites rely on website visitors who buy products and thus become frequent customers. One of the main challenges faces e-commerce organizations is to understand the behavior of customers and thus to meet their needs, and thus develop their experience of online shopping and developing their web presence. In the modern world, the opportunities for communication and electronic exchange have become large, as the use of applications and e-services has expanded in various spheres of life. because of globalization has changed the foundations of the transition from industrial to global digital economy, new business relationships have developed, as well as global networks that reduce the distances between companies and customers, and linking production, research, trade and distribution.

Content Management System is a professional foundation and is known to be the core of online commerce sites, and content management system is used to create digital content and is also professionally used to enterprise content management (ECM), web content management, and the electronic control Unit integrates document management and digital asset management functions, also storing records and facilitating access to these documents to end users. There are a large number of CMS software, But we will use a center designed specifically for e-commerce, and we actually used OpenCart, It is one of the best content management systems that contribute to online shopping, and is worth mentioning that it is free and open source, And also plays with Apache web server and MySQL data base and Both are open source, the reason for choice OpenCart because it contains many features that contribute to the creation of an e-commerce portal, as well as a customizable system, new modules can be created and integrated with the system due to its modular structure.

E-commerce is the concept of conducting trade and retail business online through the use of secure websites. It constitutes the exchange of products and services between businesses, groups and individuals, e-commerce technologies allow for instant access to more data and opportunities than ever before because they extend across the globe and reach people in almost every nation[1]. The World Wide Web offers many services such as transport, commerce and banking, as well as increasing the competitiveness of trade and understanding consumers behavior is subject to development.

There are pros of an online shopping can be described as follows:

- Shopping from home, and 24/7 any time.
- Doing comparison for shopping brands is easier.
- Getting coupons online, that's a gift to make discount to the consumers.
- Getting maximum privacy for consumers .

## 2. System Overview

### 2.1 Problem Statement

Traditional Commerce is the process of exchanging goods and services in the form of money directly, traditional Commerce began at the time of the barter system which was introduced in the early millions of years ago, the barter system defines the exchange of goods with other goods instead of money where money was not available during those days. This is where Traditional Commerce began and has been continuing till today in the form of exchanging money rather than with only goods. Traditional commerce involves face to face and in person dealing with all the parties to perform the exchange of goods and services with predefined prices, now a days traditional commerce lost its popularity and got reduced due to the e-commerce introduction in the early 20<sup>th</sup> century where e-commerce provides greater benefits in buying the goods and services easily [2].

The main objective of this study is to create an e-commerce store using OpenCart and reach several results, demonstrating the effectiveness of e-commerce and accessibility to customers worldwide, as it has greater connectivity compared to the traditional trade confined to a given region, On many payment methods such as Internet transactions or digital wallets or cash on delivery whereas traditional trade can be cash only in person and also clarify the possibility that e-commerce offers a lot of products in scope and a wide range of Products regardless of brands and types of products while traditional commerce is a limited number of products with a particular vendor in the area where limited.

### 2.2 About OpenCart

OpenCart is free open source ecommerce platform for online merchants, OpenCart provides a professional and reliable foundation from which to build a successful online store this foundation appeals to a wide variety of users, ranging from seasoned web developers looking for a user-friendly interface to use, to shop owners just launching their business online for the first time, OpenCart has an extensive amount of features that gives you a strong hold over the customization of your store, with OpenCart's tools, you can help your online shop live up to its fullest potential [3].

OpenCart is currently utilized by 444,023 live websites and an additional 775,531 sites that used OpenCart historically [4]. OpenCart multitude of great features, including multi-language capabilities, product ratings and downloadable products, and product review capabilities. Also can write reviews in the admin panel, there is built-in compatibility with a number of payment gateways such as Worldpay and Sagepay. PayPal is supported too and Google Checkout will be in the upcoming releases along with: Google Base, Google Talk, and Google Site Map. When we log-in into the OpenCart administrator panel, the dashboard is displayed, which shows statistical information about the website like order statistics and sales analytics.

### 2.2 Pros of OpenCart

- OpenCart is an open source.
- It is also module based.
- OpenCart supports downloadable products.
- OpenCart brings product ratings and reviews.
- It can be easily installed & customized.
- It offers an intuitive & user friendly dashboard.
- It follows search engine optimization.
- It also supports automatic image resizing features.
- There is support for multiple payment gateways and shipping modules.

### 3. Search Engine Optimization (SEO)

It is a process of modifying websites over the internet to increase their ranking through organic search results and thus increase the quality and quantity during website traffic. The results they get from search engines and the type of content they want to consume. We know that SE is defined as an answer machines where this SE contains a spider or what is known as crawler and that collects data by crawling as this SE searches for billions of parts of the content even offer you the best. SE indexes all content available on the Internet, such as PDFs, web pages, images, audio clips and videos, all through a process known as crawling & indexing. Then, it is arranged by a process called Ranking, which is arranged according to the possibility of matching with the user's query. Search engines that indexes pages using spider includes google, yahoo, MSN, Altavista.

OpenCart supports SEO URL, and we should active that from system settings in admin panel, opencart allows the use of SEO URLs for products, category, manufacturer, the SEO keyword is specified for each of them and then stored in the data base table and also search for page requests and translated into an internal URL, It is noticeable when we define SEO keywords for a particular product or category that will appear through the URL of the page and therefore it is very necessary to specify a unique phrase for each product and category. Note that OpenCart does not contain a duplication checker and therefore this results in inaccessibility of products if more than one product has the same URL.

SEO experts suggest that phrases used as URLs should be short and more specific. Suppose if our store is on [www.mystore.com](http://www.mystore.com) and the URL of a specific product page is specified by mybook. So when you access this product page, the URL is [www.mystore.com/mybook](http://www.mystore.com/mybook) generally, creating SEO keywords will clean up the URL of the page and thus improve the visibility of this page through search results through SEO opencart can improve visits to the site, and the more visitors to the site, the greater the demand for products.

### 4. Conceptual framework

The e-commerce site contains a wide range of products, and these are arranged in different categories to allow the customer to find the products more easily using the main menu. The customer can search for a specific product either by product name or category, as well as the customer can browse the product images and description, and also write reviews of products and finally buy the products they desire. As shown in Figure 1, this product catalog diagram and illustrates the typical use of the product catalog and its processes.

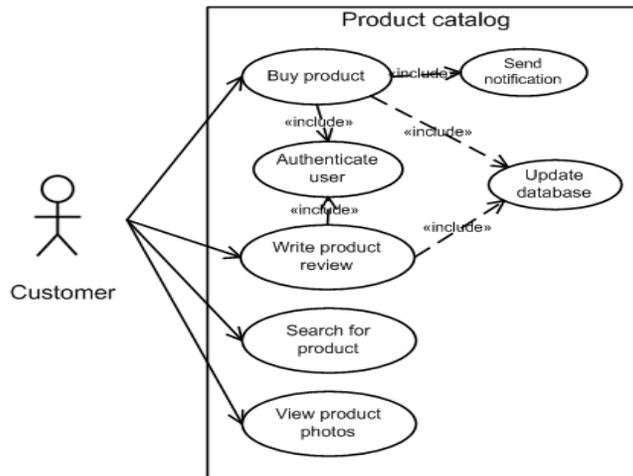


Figure 1. Product catalog processes

It is necessary for customers to create accounts for them before they make a purchase on the website and customers who have accounts on the site can log in via e-mail and password and then the authentication process with the system and get all the features of the service available. As shown in Figure 2, the diagram illustrates the typical use of customer account manager and note that the database is updated when customer creates an account, changes password or modifies customer account details.

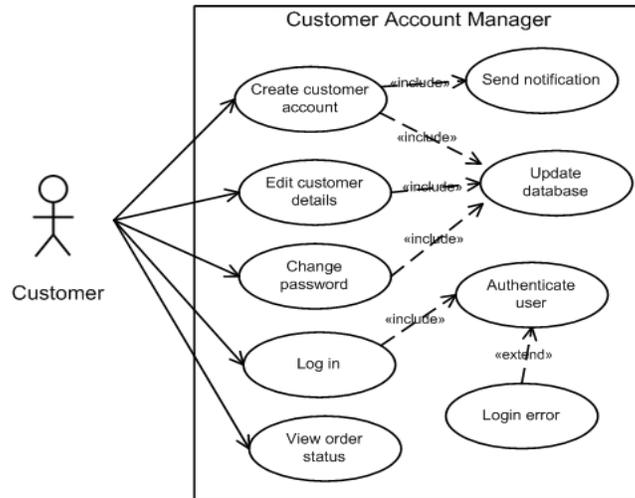


Figure 2. Illustrate the processes based on customer account management

Administrator tasks include store maintenance, customer account management, product management, image uploading, access control for site visitors and other users, as well as updating exchange rates, request regular backups of the database and manage product reviews all of this is done through the dashboard. Figure 3, demonstrates website administration page diagram "dashboard" as well demonstrates typical use case of administrator through dashboard.

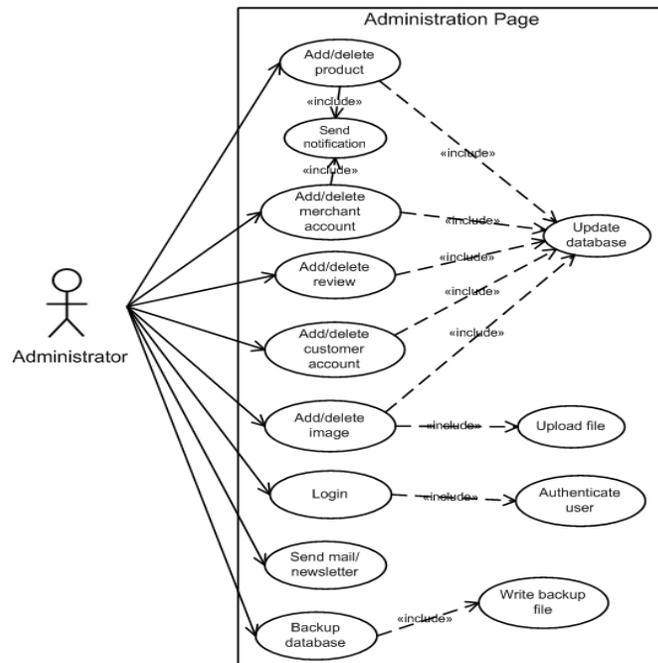


Figure 3. Illustrate administrator tasks and process workflow within dashboard

After the customer has added all the products he/she wants to buy to the cart, so now the time to check out. The customer confirms the delivery details of the place of receipt of delivery, whether the place of residence or other and also enter the delivery method, basically that's some information about shipping, so customer choose the shipping option, that's like flat rate shipping, free shipping, pick up from store, and weight based shipping, all of which are set by the administrator. For example, free shipping is only available when the value of the cart exceeds a certain amount. That's amount determines by administrator, then the customer should confirm the order, then the payment is successful, finally the product is taken out of

the warehouse and delivered by delivery to the customer, then the data base of the warehouse is updated. Inside the dashboard is a set of reports for the purchased products, customers, and the overall sales.

## 5. System Analysis

E-commerce sites are large and complex, but quality requirements require the essential performance of the effective actors. The ISO model has been used, It was chosen as a reference point, and this is due to its popularity and accountability by developers, there are six quality factors followed in the ISO 9126 Software Quality Model.

These factors have been improved to become standards and these standards have been evaluated through the development process, the program itself, and the design measurement. As shown in Figure 4, these are the ISO 9126 factors and are as follows, functionality, usability, reliability, efficiency, maintainability, portability. It is also divided into sub properties such as accuracy, security, suitability, time behavior.

<b>Functionality</b>	Shows the existence of a set of functions and their specified properties. The functions satisfy stated or implied needs
<b>Reliability</b>	That capability of software which maintains its level of performance under given conditions for a given period of time
<b>Usability</b>	Attributes that determine the effort needed for use and the assessment of such use by a set of users
<b>Efficiency</b>	The relationship between the level of performance of the software and the amount of resources used under stated conditions
<b>Maintainability</b>	The effort needed to make specified modifications
<b>Portability</b>	The ability of the software to be transformed from one environment to another

Figure 4. ISO 9126 Quality factors

## 6. System Results

First of all when consumer enter the site, the homepage is displayed, it contains categories, products, and also contains slide shows where it displays ads showing the content of the site, In addition, customers can register and add their own account on the site and can also add the products they wish to purchase later to the wish list as shown in Figure 5.



Figure 5. Home page

Here, customers can choose the currency they want to use to complete the payment procedure as shown in the Figure 6. Note that the default currency is US Dollar. Accordingly, product prices are entered in US Dollar and are

converted to any other currency based on customers' choice of the desired currency, new currencies are added and their exchange rate is entered through dashboard.



Figure 6. Apply currency within the system

Here categories & sub categories have been added, typically categories are found in the main menu, for example, parent category is young adult, and the sub menu includes sub categories such as self -esteem & personal health & political as shown in Figure 7. With categories and sub-categories within which products can be easily classified, it is therefore easier for consumers to find the products they desire.



Figure 7. Categories & sub-categories

Adding products to the system as noted that the products here are books where the product name has been added, and description and determine the price of the product . The administrator can put a discount on the products, as well as customers can see the specification of the book where it is clarified several details about the product such as number of pages of the book, the publisher and the language in which the book is written and finally customers can add reviews as shown in the Figure 8.

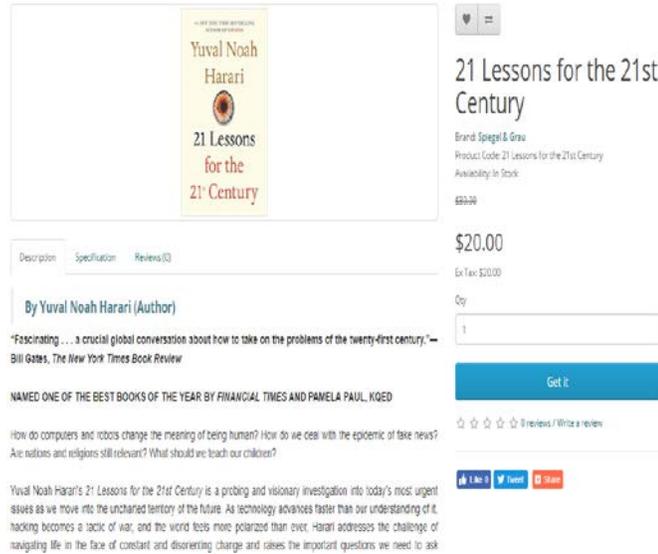


Figure 8. Product description & specification

Below each product there are related products as they are related to the selected product as they share the same author or the same category as shown in the Figure 9. As noted here, these two books have been classified as related products for a product "21 lessons for the 21 century".

Related Products

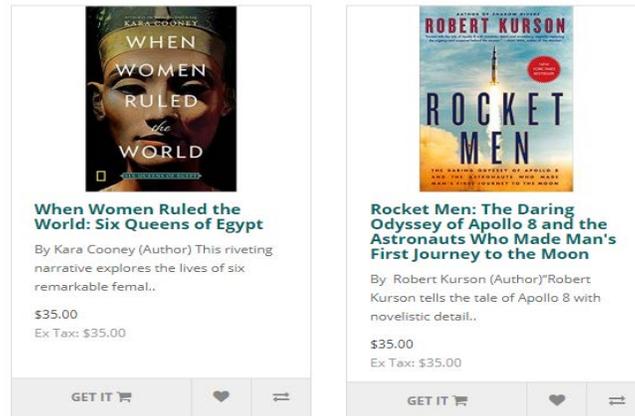


Figure 9. Related products

Adding manufactures to the system where they are as Brands and considering that the products are books, since manufactures have been introduced as publishing houses, manufacture banner have been added to the home page so customers can choose the books they want based on the publishing house as shown in the Figure 10.



Figure 10. Manufacturer banner

Captcha have been added to the registration page and contact us page, so they verify that visitors are real users, and they are not bots. Also social media icons have been added to the contact us page so that if the customer wants to communicate with us on social networking sites and all this to facilitate communication with customers in ways other than the official website as shown Figure 11.



Figure 11. Capetcha and social media icons

As shown in the Figure 12 this is a bestseller module, so visitors can see the books that have been classified as best-selling on the site and most popular.

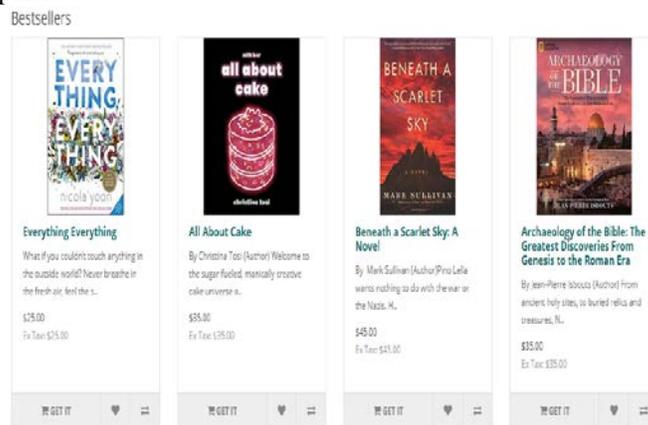


Figure 12. Best-selling products

Marketing campaign is very important in the field of e-commerce, where it can be used to market samples of new products and administrator can then see how satisfied customers are with these products or can be used to offer discount products as shown in Figure 13.



Figure 13. Marketing campaign banner

After click on marketing campaign banner this page will be displayed as shown in Figure 14, this is an individual photographers page, so that the link of this page have been added to the marketing campaign.

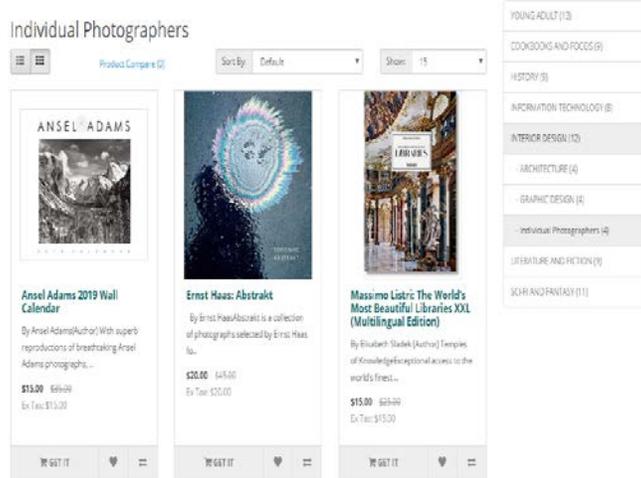


Figure 14. Products used in a marketing campaign

Note that marketing campaign is a link with tracking code where the code it used to collect data about number of clicks and orders may on that link. When accessing the dashboard and following the progress of the marketing campaign process, we observe here that the marketing campaign that used is offer. From the number of clicks & orders an administrator can determine whether this marketing campaign is successful or not as shown in Figure 15.

<input type="checkbox"/>	Campaign Name	Code	Clicks	Orders	Date Added	Action
<input type="checkbox"/>	Eaid	5dc6f8f10e496f	0	0	20/02/2019	
<input type="checkbox"/>	Happy new year	5dc61e6460871	0	0	19/02/2019	
<input type="checkbox"/>	offer	5c7c0607f9e6a	9	5	04/03/2019	
<input type="checkbox"/>	summer sales	5dc6b9075d5c2	0	0	19/02/2019	

Showing 1 to 4 of 4(1) Pages

Figure 15. Marketing campaign menu in the dashboard

One of e-commerce websites feature is the use of coupons, Where have been placed an advertising at the top of the page through the notification bar that MOTHERSDAY keyword can be used to get a 25% discount, administrator through dashboard can activate the use of coupons and also can determine the keywords used as well as the maximum number to use coupons and also define how many times the single customer can use the coupons.

Note that using the coupon offers a 25% discount, and the price of the product is \$25 and when using coupon we observe that the value of coupon from the original price is \$6.25, and therefore, the total value that have been paid \$18.75, the customer has \$31.25 left of the total value of the store credit given to the customer, and which is \$50, the consumer has used an store credit feature , therefore, there are some financial amounts that are shown with a negative sign, they are deducted from the system's existing reserve amounts as shown in Figure 16.

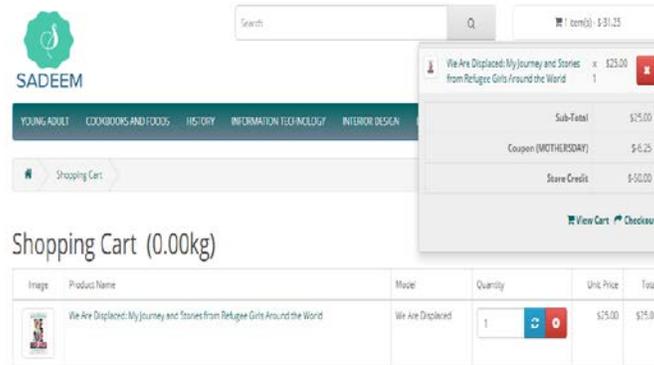
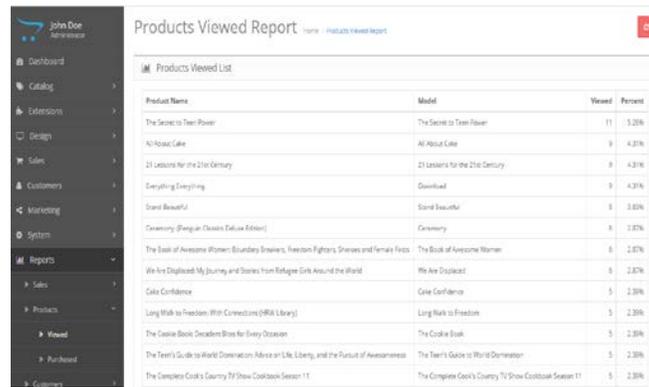


Figure 16. Use coupon

There are many features in the dashboard and the reports are one of them, there are many reports including sales, products, customers, marketing, we'll show some of them.

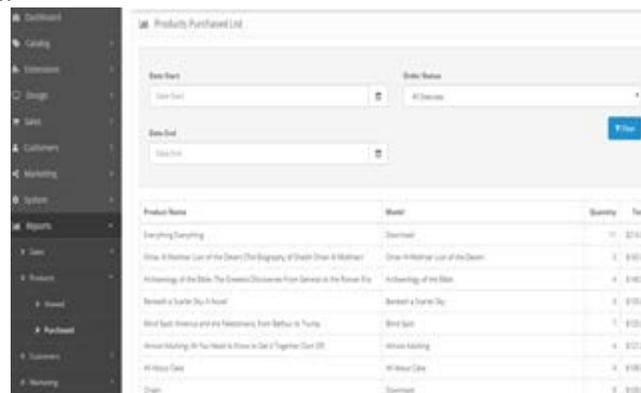
This is products viewed report, this is a list of all the products and the number of times they are viewed by customers, this list includes the product name, model, number of views, and number of views as a percentage, so the administrator can see which products are most popular with customers as shown in Figure 17.



Product Name	Model	Viewed	Percent
The Secret to Teen Power	The Secret to Teen Power	11	3.20%
All About Cake	All About Cake	9	4.21%
21 Lessons for the 21st Century	21 Lessons for the 21st Century	9	4.21%
Everything Everything	Download	9	4.21%
Smart Beautiful	Smart Beautiful	8	3.82%
Coverstory (Single-Discussion Edition)	Coverstory	6	2.87%
The Book of Awesome Women: Boundary Breakers, Freedom Fighters, Sneakers and Female Firsts	The Book of Awesome Women	6	2.87%
We Are Displaced: My Journey and Stories from Refugee Girls Around the World	We Are Displaced	6	2.87%
Color Confidence	Color Confidence	5	2.39%
Long Walk to Freedom: Winnie Mandela (Penguin Classics)	Long Walk to Freedom	5	2.39%
The Cookie Book: Decadent Bites for Every Occasion	The Cookie Book	5	2.39%
The Teen's Guide to World Domination: Advice on Life, Liberty, and the Pursuit of Awesomeness	The Teen's Guide to World Domination	5	2.39%
The Complete Cook's Country TV Show Cookbook Season 11	The Complete Cook's Country TV Show Cookbook Season 11	5	2.39%

Figure 17. Products viewed report

Here you can see all purchased products where the product name, model, number of purchase times per product and total revenue accumulated from each product are determined, the administrator can also use the filter feature to control the range of results as shown in Figure 18.



Product Name	Model	Quantity	Total
Everything Everything	Download	10	\$24.00
How to Measure Up to the Dream (The Biography of Oprah Winfrey)	How to Measure Up to the Dream	4	\$16.00
Archaeology of the Bible: The Excavated Discoveries from Jerusalem to the Roman Era	Archaeology of the Bible	4	\$16.00
Breakfast in Berlin (Day 4 novel)	Breakfast in Berlin Day	4	\$16.00
How to Measure Up to the Dream (The Biography of Oprah Winfrey)	How to Measure Up to the Dream	4	\$16.00
All About Cake	All About Cake	4	\$16.00
Diary	Download	4	\$16.00

Figure 18. Products purchased report

Here we can see how many orders each user has confirmed including the number of products purchased and the total revenue per customer, an administrator can also click on the editing option that forwards it to the customer management list where modifications to customer information can be added. It is noticeable here there is a negative amount of money which means that the administrator has given a transaction to this customer and this amount transferred is calculated from the system reserve as shown in Figure 19.

Customer Name	Email	Customer Group	Status	No. Orders	No. Products	Total	Action
Aren abd	arenabd@gmail.com	Default	Enabled	1	2	\$0.00	
Genec ec	Genec@gmail.com	Default	Enabled	1	1	\$0.00	
Israh thalle	israhthalle@gmail.com	Default	Enabled	1	1	\$4.75	
Dana fah	Danafah@gmail.com	Default	Enabled	1	1	\$18.75	
Ayha ezzi	Ayhaezzi@gmail.com	Default	Enabled	2	5	\$30.00	
Alfah	alfah@gmail.com	Default	Enabled	1	2	\$40.00	
Tape elah	tapelalah@gmail.com	special customer	Enabled	1	1	\$170.75	

Figure 19. Customer orders report

Google Analytics is a free web analytics tool, It lets user measure user advertising ROI as well as track user video and social networking sites and applications .Google analytics tool also offers Geo Targeting (targeting visitors in a specific geographic area), executive dashboard, site overlay, traffic conversion funnels, e-commerce reports and visitor segmentation analysis. The reports allow user to drill down and learn how visitors reach user site, on which page they exit , what they buy, how long they stay on each page and much more, the analysis offered by Google Analytics means that user can tailor the pages to suit user visitors, monitor the results of any advertising user do in a way that is impossible with printed or broadcast media. User can also set-up a Sales Funnel and monitor which components are not working as they should [5]. Google analytics have been used and access to several results. As shown in figure 20, we can configure an overview of site traffic, seeing the number of views per page, the average time a visitors spends on each page.



Figure 20. Specifies the traffic through the site

Tracking code specifies the number of active users on the site, the number of page views, and also the number of pages currently active as shown in Figure 21.



Figure 21. Specifies the number of active users

## 7. Conclusions

The e-commerce environment is a solution for small and medium-sized enterprises and provides them with a growth-oriented environment to move its market and expand the market area, the use of e-commerce is a cost-effective solution to maintain competition, especially for access to global markets.

The development of information technology effects on many countries around the world and imposes changes on trade, economic and social development plans, which have reflected the major implications of the realization of the concept of globalization.

Electronic commerce has the capacity to improve efficiency and productivity in many areas and has therefore received considerable attention in many countries, in this study, an e-commerce platform was discussed and set up using OpenCart for online business activities, several results have been reached, indicating the effectiveness of electronic commerce, and access to customers around the world, electronic commerce has greater connectivity than traditional trade, which is limited to a particular region, e-commerce also offers a wide range of products regardless of brands, unlike traditional trade.

OpenCart is a free and open source e-commerce platform, It provides a professional and reliable basis from which to create a successful online store, and because it is an open source that is enabled us to add our code, OpenCart is easily installed and customized, also it's SEO friendly, and it supports a large number of resources, OpenCart is an effective solution for small and medium-sized enterprises that want to expand in e-commerce field.

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