



Complete multivendor e-commerce web application development: A real-time example

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ABSTRACT

E-Commerce or Electronic Commerce is a platform based on the internet where the buyers and sellers are interacting themselves over website or smartphone applications, buying and selling products and services, and most of the cases the financial transactions are also being performed over the internet via different portals and transaction service providers. Starting from property, land, labor, different services, and up to our daily grocery items are now available over e-commerce. Chocro.com.bd is a multivendor e-commerce shopping website. One of the authors developed this web application. The customer needs to fill some fields to order a specific product. The main purpose of this paper is to describe the whole procedure and technical details of all related tasks of the main business software systems and website. The preliminary business procedure has been touched upon, and step by step procedures to make the web application systems have been described from the own experiences of the developer while developing Chocro.com.bd.

INTRODUCTION

E-commerce refers to the use of the Internet and the web for business transactions. Officially, e-commerce is about digitally enabled commercial transactions between companies and individuals. For the most part, this means transactions on the Internet and the web (Laudon & Laudon, 2013). E-commerce is the digitally enabled commercial transactions between and among organizations and individuals (Chaffey, 2011). Hunt (2007) mentioned that “e-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals.” E-commerce is defined as the process of purchasing, selling, transferring, or exchanging products, services, or information over a computer network, including the Internet (Turban et al., 2008). E-

commerce started in 1995. As the developed countries are the pioneers of e-commerce, their e-commerce platforms are much stronger than the e-commerce platforms in developing countries like Bangladesh. The world e-commerce is being led by giants like Amazon.com, Aliexpress.com, eBay.com, Taobao.com, Zingdong.com, Rakuten.com, Flipkart.com, etc. Several e-commerce sites in Bangladesh have created their successful values and brand image to the customers of our own country, for example, Pikaboo.com, Bikroy.com, Bagdoom.com, Deligram.com, Ajkerdeal.com, Rokomari.com, Otaba.com, Evaly.com, etc. *Chocro.com.bd* is a newly built multivendor e-commerce shopping website. “We connect thousands of buyers and sellers around the world, empowering people & creating economic opportunity for all. Within our markets, thousands of people around the world connect, both online and offline, to make, sell and buy unique goods. We also offer a wide range of

Seller Services and tools that help creative entrepreneurs start, manage and scale their businesses. Our mission is to reimagine commerce in ways that build a more fulfilling and lasting world, and we're committed to using the power of business to strengthen communities and empower people" (chocro.com.bd/about-us/).

METHODOLOGY

Before describing a web software development procedure, we have to know about the business procedure or what is the business about. The business procedure is simple. There are four parties included in this business: vendor or supplier, customer, delivery agency, and chocro.com.bd. Chocro is playing an intermediary role of all parties here. It also plays a vendor role with its authentic product to maintain product quality. A vendor can be a brand or person with a physical or digital product. The main procedure is that customers place orders through websites and vendors or Chocro ships the product through delivery agency according to the agreement to the customers and Chocro gets the commission in each sale of the website according to the agreement. Another crucial part of the business is its software system which has also two parts: one is the website and another one is the dashboard. The web application was developed in WordPress. The sample codes are described in Appendix below.

FINDINGS

As findings, here we will share the experiences we got from the real-time work regarding building Chocro. Below are the steps of developing a multivendor E-commerce web application (chocro.com.bd) from scratch to the end that the developer followed.

Step 1: Designing the business idea and model and all related procedures and rules.

Step 2: Selecting the business or brand name: at first, the brand or website name was selected according to the available domain name. Then, it is to buy the commercial domain from namecheap.com.

Step 3: The developer divided the application into four parts: frontend websites, admin dashboard, vendor dashboard, Backend integration.

Step 4: Scratch designing in Illustrator according to the business model: the developer scratched all the front end like the home page, shop page, single product page, cart page, login and sign up page, checkout page, customer dashboard, vendor dashboard, etc. to illustrator.

Step 5: Designing and developing the front end of the web application: The developer did coding for the front end using HTML, CSS, JS, jQuery, Bootstrap, Font awesome; and used the Bootstrap framework to responsive my website to all devices.

Step 6: Developing the backend of the web application: In case of backend development of the application, the developer used the WordPress admin dashboard. So it had to develop the website as a custom WordPress theme using PHP, and then to convert the frontend to WordPress Theme. And the vendor dashboard was developed using PHP and Vue JS, and was then integrated with WordPress as API. Ajax was used for a live search on the website.

Step 7: Testing the application in localhost: Full website was developed in an offline server environment using Xampp in the localhost.

Step 8: To buy the domain name and hosting space: The developer used Business hosting from Namecheap.com including unlimited storage, unlimited bandwidth, Dedicated IP, Auto Backup, custom name server, unlimited domain, unlimited email, unlimited database, and many more.

Step 9: Integrating domain with hosting: Then the developer integrated domain chocro.com.bd with hosting through custom nameserver.

Step 10: Creating the database according to the application: Then the database was created with required fields using SQL and MySQL Database on phpMyAdmin server.

Step 11: Integrating the web application with a database in a specific domain: Then it was to

install the web application according to the database in the domain.

Step 12: Integrating SSL: Then the developer integrated secure connection for the customers' safe transaction, browsing, and sharing information with the websites which were issued by Sectigo RSA Domain Validation Secure ServerCA.

Step 13: Integrating and installing all related API and Plugin:

- a) Email API: Email API set up all automated email, using different e-mail for different purposes, like for order confirmation using `order@chocro.com.bd`, and for contact purpose using `contact@chocro.com.bd`. We also use contact form plugin to receive mail from the customer.
- b) Social login API: It had to create developer apps on social sites like Facebook, Google, LinkedIn to get the facility, or login with social ID.
- c) WOO commerce: Installing woo-commerce plugins with customization which control all the sales, order, customer data, product update, sales report, revenue report, analytics, and trends with chart and graph in real-time.
- d) Invoice builder: Designed and developed a plugin for the automatic generation of the invoice for each order.
- e) Multivendor API: Integrated the multivendor API in the main dashboard.
- f) Facebook Integration by pixel: Integrating with Facebook through Facebook built-in API.
- g) SMS Plugin: Used the SMS plugin to send an automated SMS notification to the customer and vendor through `msglobal.com` gateway.
- h) Currency converter: Included the Currency converter API with a real-time global currency rate.
- i) Payment API: Temporarily we integrated master card, Visa, bKash, Rocket, Cheques payment, and COD as payment method.

Step 14: SEO, Google Business with location: The business was included in google business and google map to easily identify by customers.

Step 15: The final tasks were Vendor acquisition, product upload, marketing, and sales.

The proposed site design is characterized by attractive and provides easy navigation, multiple options in terms of brand, color and design. By providing payment type, the order will be completed by generating e-bill. A registration page, Search option, Shopping cart, Admin page, Payment page, Customer order tracking page and so on are in place to easy complete the application.

WEB APPLICATION

The proposed web application comprises of dynamic web pages which has been created for both client and server side scripts. A dynamic web page is a web page that is generated by a server-side program or script. For the testing purpose website is hosted on local hosts i.e., personal computers. Browser like Google Chrome, Mozilla Firefox or Safari supports this program. The browser makes a Hypertext Transfer Protocol (HTTP) request to the web server for a specific dynamic web page, the web server then looks up the extension of the requested file to find out which application server should process the request. When the application server receives a request, it runs the specified script. Often, this script uses the data that it gets from the web browser to get the appropriate data from a database server. This script can also store the data that it receives in the database. When the application server finishes processing the data, it generates the HTML for a web page and returns to the web server. Then, the web server returns the HTML to the web browser as part of an HTTP response.

DISCUSSION

E-Commerce can be defined as online purchases and transactions using the internet. The developer faced few difficulties while building this e-commerce web application. Choosing the right hosting platform was an issue to think about. Which programming language should the developer use for such a website as there are multiple programming languages to develop websites was another issue to consider. The most important thing is the website speed because it depends on hosting platform, website traffic, Server RAM, website optimization. Properly

selecting those things was challenging during development.

CONCLUSION

Nowadays the internet is available almost every corner of our country as well as most of the developing, developed and underdeveloped countries throughout the world, people are busier and having less time for their shopping they are depending on the internet for their purchase of daily necessary items. Starting from grocery, it is possible today to purchase some land or invest in other countries just using the internet. It is very well possible to buy a plane ticket or a tourism package in another country. Hotel booking, renting vehicles, delivering a package, or ordering a favorite dish from a nearby restaurant is a matter of a few seconds. For facilitating this kind of service the organizations have their developed and customized website. Most of the cases they have smartphone apps for better user experiences. This paper mainly focuses on the development of

multivendor e-commerce web applications and the main objective is to include a real-time example of how a multivendor e-commerce web application can be built. The preliminary business procedure has been touched upon, and step by step procedures to make the web application systems have been described from the own experiences of the developer while developing Chocro.com.bd.

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APPENDIX

Sample code:

```
<?php
get_header(); ?>
<div id="primary" class="content-area <?php mhroxy_content_columns(); ?>">
  <main id="main" class="site-main">
    <?php if ( have_posts() ) : ?>
      <div class="row">
        <div class="mf-post-list">
          <?php /* Start the Loop */ ?>
          <?php while ( have_posts() ) : the_post(); ?>
            <?php
              get_template_part( 'template-parts/content',
get_post_format() );
            ?>
          <?php endwhile; ?>
        </div>
      </div>
      <?php mhroxy_numeric_pagination(); ?>
    <?php else : ?>
      <?php get_template_part( 'template-parts/content', 'none' ); ?>
```

```

        <?php endif; ?>

    </main>
    <!-- #main -->
</div><!-- #primary -->

<?php get_sidebar(); ?>
<?php get_footer(); ?>

function mhroxy_register_sidebar() {
    $sidebars = array(
        'blog-sidebar' => esc_html__( 'Blog Sidebar', 'mhroxy' ),
        'topbar-left'  => esc_html__( 'Topbar Left', 'mhroxy' ),
        'topbar-right' => esc_html__( 'Topbar Right', 'mhroxy' ),
        'topbar-mobile' => esc_html__( 'Topbar on Mobile', 'mhroxy' ),
        'header-bar'   => esc_html__( 'Header Bar', 'mhroxy' ),
        'post-sidebar' => esc_html__( 'Single Post Sidebar', 'mhroxy' ),
        'page-sidebar' => esc_html__( 'Page Sidebar', 'mhroxy' ),
        'catalog-sidebar' => esc_html__( 'Catalog Sidebar', 'mhroxy' ),
        'product-sidebar' => esc_html__( 'Single Product Sidebar', 'mhroxy' ),
        'footer-links' => esc_html__( 'Footer Links', 'mhroxy' ),
    );

    if ( class_exists( 'WC_Vendors' ) || class_exists( 'WCMp' ) ) {
        $sidebars['vendor_sidebar'] = esc_html( 'Vendor Sidebar', 'mhroxy' );
    }

    for ( $i = 1; $i <= 6; $i ++ ) {
        $sidebars["footer-sidebar-{$i}"] = esc_html__( 'Footer', 'mhroxy' ) . " {$i}";
    }

    $custom_sidebar = mhroxy_get_option( 'custom_product_cat_sidebars' );
    if ( $custom_sidebar ) {
        foreach ( $custom_sidebar as $sidebar ) {
            $title = $sidebar['title'];
            $sidebars[ sanitize_title( $title ) ] = $title;
        }
    }

    // Register sidebars
    foreach ( $sidebars as $id => $name ) {
        register_sidebar(
            array(
                'name' => $name,
                'id' => $id,
                'before_widget' => '<div id="%1$s" class="widget %2$s">',
                'after_widget' => '</div>',
                'before_title' => '<h4 class="widget-title">',
                'after_title' => '</h4>',
            )
        );
    }
}

add_action( 'widgets_init', 'mhroxy_register_sidebar' );

```