External Resources Cost Report for Marketplace Website

Project: Marketplace Website Development using the MERN Stack
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1. Introduction

This report provides a detailed breakdown of the external resource costs required for hosting and maintaining the marketplace website. In addition to designing and developing the MERN-stack application, external services such as domain registration, cloud server hosting, and additional infrastructure components are necessary to ensure high performance, scalability, and reliability. The estimates below are provided in Pakistani Rupees (PKR) and are subject to change based on provider-specific pricing and current exchange rates.

2. Domain Registration

A custom domain is essential for a strong online identity. Based on current market rates in Pakistan, a premium domain registration (for example, a .pk or .com.pk domain) is estimated at approximately **5,000 to 6,000 PKR per year**. This cost typically includes:

- Domain registration and annual renewal.
- Basic DNS management.
- Standard customer support for domain-related issues.

Note: Prices may vary slightly among registrars, but this range provides a reasonable estimate.

3. Cloud Hosting Providers Comparison

To host the website and its backend services, a reliable cloud hosting service is required. Below is a comparison of four leading providers – AWS EC2, DigitalOcean, Linode, and Vultr – with estimated pricing converted into PKR (assuming an exchange rate of roughly 1 USD ≈ 300 PKR). These estimates refer to entry-level plans that are suitable for initial deployment with room for scaling.

3.1 AWS EC2

- **Overview:** AWS EC2 offers highly scalable, flexible compute capacity with pricing based on instance type, usage (per hour or per second), and additional features (such as storage and data transfer).
- **Estimated Cost:**
  A basic instance (e.g., t2.micro or similar) costs roughly **$3.50 to $5 per month** (approximately **1,050 to 1,500 PKR per month**). Additional fees for data transfer, storage, and other services may apply.
- **Pros:**
  - High scalability and extensive integration with other AWS services.
  - A large global network of data centers.
- **Cons:**
  - Complex pricing structure.
  - May require expertise to optimize costs.

3.2 DigitalOcean

- **Overview:** DigitalOcean's Droplets provide simplified virtual machines with transparent, flat-rate pricing. Their platform is popular for its ease of use and straightforward cost estimation.
- **Estimated Cost:**
  The basic Droplet plan starts at around **$5 per month** (roughly **1,500 PKR per month**), which includes a fixed amount of memory, storage, and data transfer.
- **Pros:**
  - Simple pricing and ease of deployment.
  - Developer-friendly with extensive community support.
- **Cons:**
  - Fewer advanced features compared to AWS.
  - Manual scaling adjustments may be required.

3.3 Linode

- **Overview:** Linode offers a range of virtual private servers with competitive pricing and a focus on consistent performance.
- **Estimated Cost:**
  Entry-level plans also start at approximately **$5 per month** (about **1,500 PKR per month**).
- **Pros:**
  - Straightforward pricing and a reliable network.
  - Flexible scaling options.
- **Cons:**
  - Fewer managed services than larger platforms.
  - Requires manual server management.

3.4 Vultr

- **Overview:** Vultr provides virtual machines with both hourly billing and predictable monthly costs. Their high-performance SSD storage options and global data centers make them competitive.
- **Estimated Cost:**
  Vultr's basic plans start at around **$5 per month** (approximately **1,500 PKR per month**).
- **Pros:**
  - Competitive pricing with flexible billing options.
  - Multiple data center locations worldwide.
- **Cons:**
  - Customer support may be less extensive compared to AWS.
  - Fewer integrated services.

4. Additional External Resources

Depending on the project scale and desired features, you may also need to budget for:

- **Content Delivery Networks (CDNs):** To improve page load speeds globally, costing around **500–1,000 PKR per month**.
- **Email Services:** For transactional and marketing emails, which might run between **1,000 to 2,000 PKR per month**.
- **SSL Certificates:** While often included with hosting plans, premium SSL certificates (if purchased separately) may cost between **500 to 2,000 PKR per year**.
- **Backup and Storage Solutions:** Costs vary depending on data volume and required redundancy.

Note: These figures are approximate and should be refined with specific provider quotes and usage estimates.

5. Portfolio

Please find below my portfolio links for your reference:

- **GitHub:** https://github.com/ahmadafzal007
- **Personal Website (Vercel):** https://ahmedafzal.vercel.app/
- **YouTube Channel:** https://www.youtube.com/@ahmadafzal4340/videos
- **LinkedIn Profile:** https://www.linkedin.com/in/ahmed-afzal-0074981b8/

6. Deliverables, Timeline, and Cost Breakdown for Car Rental System

Project Overview

The project is a comprehensive car rental platform similar to expatriates.com, tailored for car rentals. It will enable users to search for vehicles, apply filters based on location, price, and availability, and directly contact car owners. Car owners can list their vehicles with detailed information, images, and rental terms. An admin panel will facilitate the management of users, listings, and platform analytics. Monetization strategies include featured ads, subscription plans, and booking commissions.

Feature Breakdown and Deliverable Distribution

The following features have been divided into three distinct deliverables:

Deliverable 1: Core User & Listing Functionality

- **Features Included:**
    1. **User Registration and Authentication**
       Time: 2 days | *Cost:* Rs 4,000
    2. **Car Listing Management**
       Time: 3 days | *Cost:* Rs 6,000
    3. **Advanced Search and Filtering**
       Time: 2 days | *Cost:* Rs 3,000
    4. **Direct Messaging System**
       Time: 4 days | *Cost:* Rs 8,000
- **Subtotal:**
  Estimated Time: 11 days
  Estimated Cost: Rs 21,000

Deliverable 2: Booking, Payment, and Administration

- **Features Included:** 5. **Booking and Reservation System**
  Time: 3 days | *Cost:* Rs 8,000
  7. **Reviews and Rating**
  Time: 3 days | *Cost:* Rs 2,500
  8. **Admin Panel**
  Time: 4 days | *Cost:* Rs 12,000
- **Subtotal:**
  Estimated Time: 10 days
  Estimated Cost: Rs 22,500

Deliverable 3: Final Enhancements and Deployment

- **Features Included:** 9. **Monetization Feature**
  Time: 3 days | *Cost:* Rs 12,000
  10. **Responsive Design**
  Time: 2 days | *Cost:* Rs 3,000

11. **Security Measures**
Time: 1 day | *Cost:* Rs 1500
12. **Testing and Quality Assurance**
Time: 2 days | *Cost:* Rs 2,000
13. **Deployment**
Time: 4 days | *Cost:* Rs 9,000
- **Subtotal:**
Estimated Time: 15 days
Estimated Cost: Rs 27,500

Note: Although the raw sum of individual feature days comes to 37 days, the overall project timeline is estimated at **40 days** to account for coordination, integration, and buffer time.

Overall Project Summary

- **Total Estimated Time:** 40 days
- **Total Estimated Development Cost:** Rs 71,000

Follow-On Support Charges

After the completion of the project, any additional support will be provided at a rate of **3,000 PKR per day (covering 5 hours of support)**.

7. Conclusion

The estimated external resource costs for the marketplace website include approximately 5,000–6,000 PKR per year for a premium domain, with monthly cloud hosting expenses ranging from roughly 1,500 to 2,000 PKR for entry-level instances (using providers like AWS EC2, DigitalOcean, Linode, or Vultr). Additional services such as CDN, email hosting, SSL, and backup solutions may add further costs depending on the project's scale and performance requirements.

The car rental system component is segmented into three deliverables:

- **Deliverable 1 (Core User & Listing Functionality):** 11 days / Rs 21,000
- **Deliverable 2 (Booking and Administration):** 12 days / Rs 22,500
- **Deliverable 3 (Final Enhancements and Deployment):** 14 days / Rs 27,500

This structured approach allows for phased implementation and easier management of the project, along with built-in contingency to meet a total estimated timeline of 40 days. Additionally, follow-on support is available at 3,000 PKR per day for any further assistance after project completion.

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