



# Trinity Clothing Brand Website



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## 1 Problem Statement

- Trinity's lack of an online platform restricts its potential within the retail industry, despite its established presence in Mayagüez, Puerto Rico.
- As consumer behavior increasingly favors online shopping, Trinity must adapt to evolving preferences by establishing an online platform, thus enhancing accessibility and improving product visibility.

## 2 Problem Background

- Consumers are increasingly relying on digital platforms for their purchasing needs.
- Addressing the lack of an online platform is crucial for Trinity's growth and competitiveness.
- As ecommerce becomes more popularized, improving accessibility and visibility grows more essential for reaching broader audiences and sustaining success.

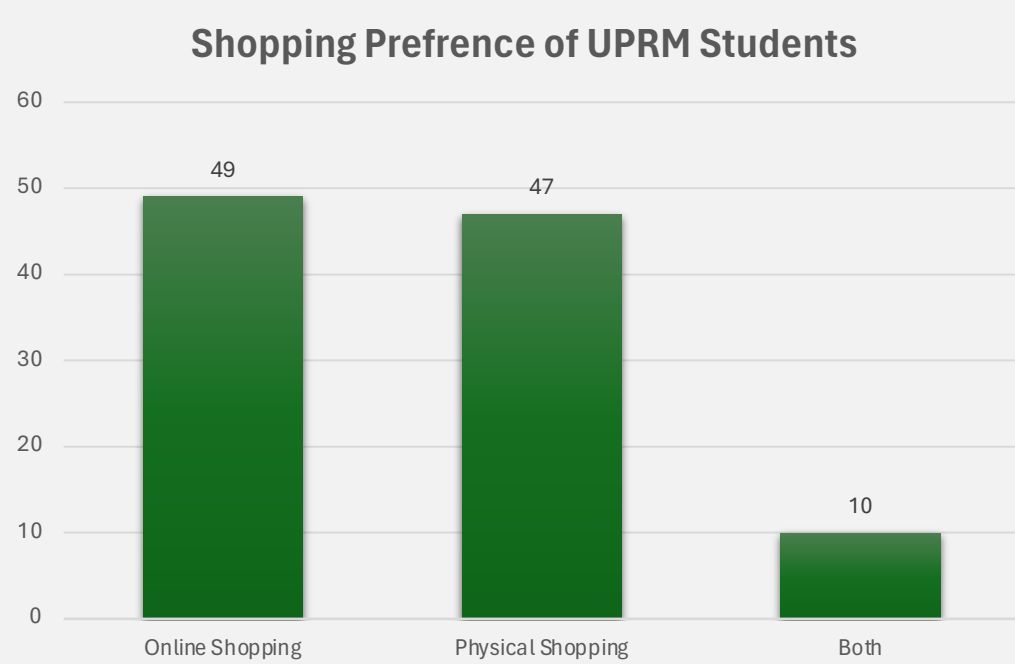


Figure 1: Results of Questionnaire completed by 106 students

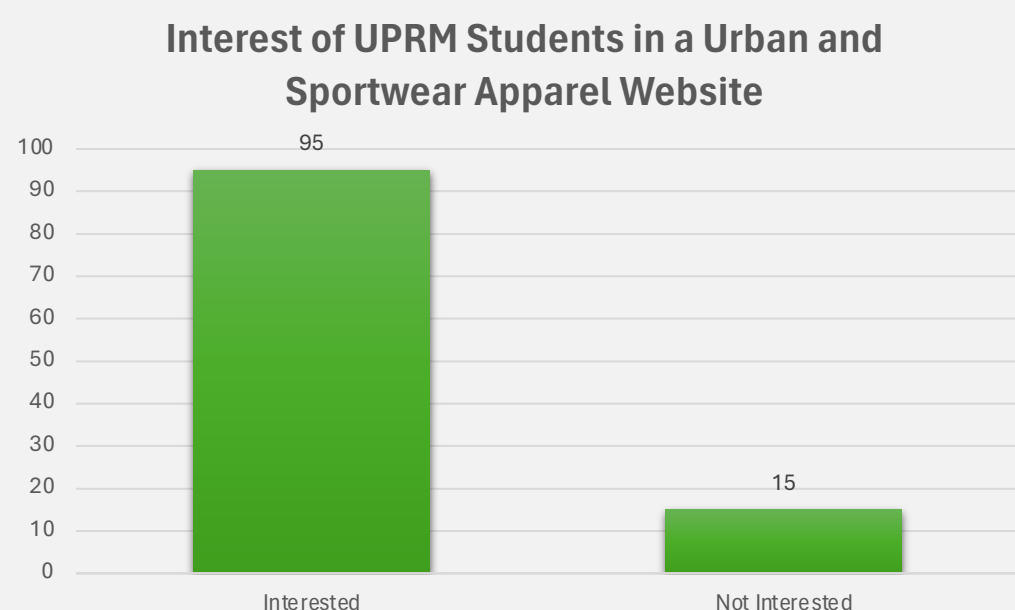


Figure 2: Results of Questionnaire completed by 106 students

## 3 Objectives

- Develop a UI/UX interface validated through usability effectiveness and driven by live user feedback.
- Implement a secure payment gateway and robust security measures.
- Integrate live chat interaction to address client inquiries promptly.

- Monitor and optimize website performance, including load speed and reliability.
- Deliver a successful launch by early May.

## 4 Technical Approach

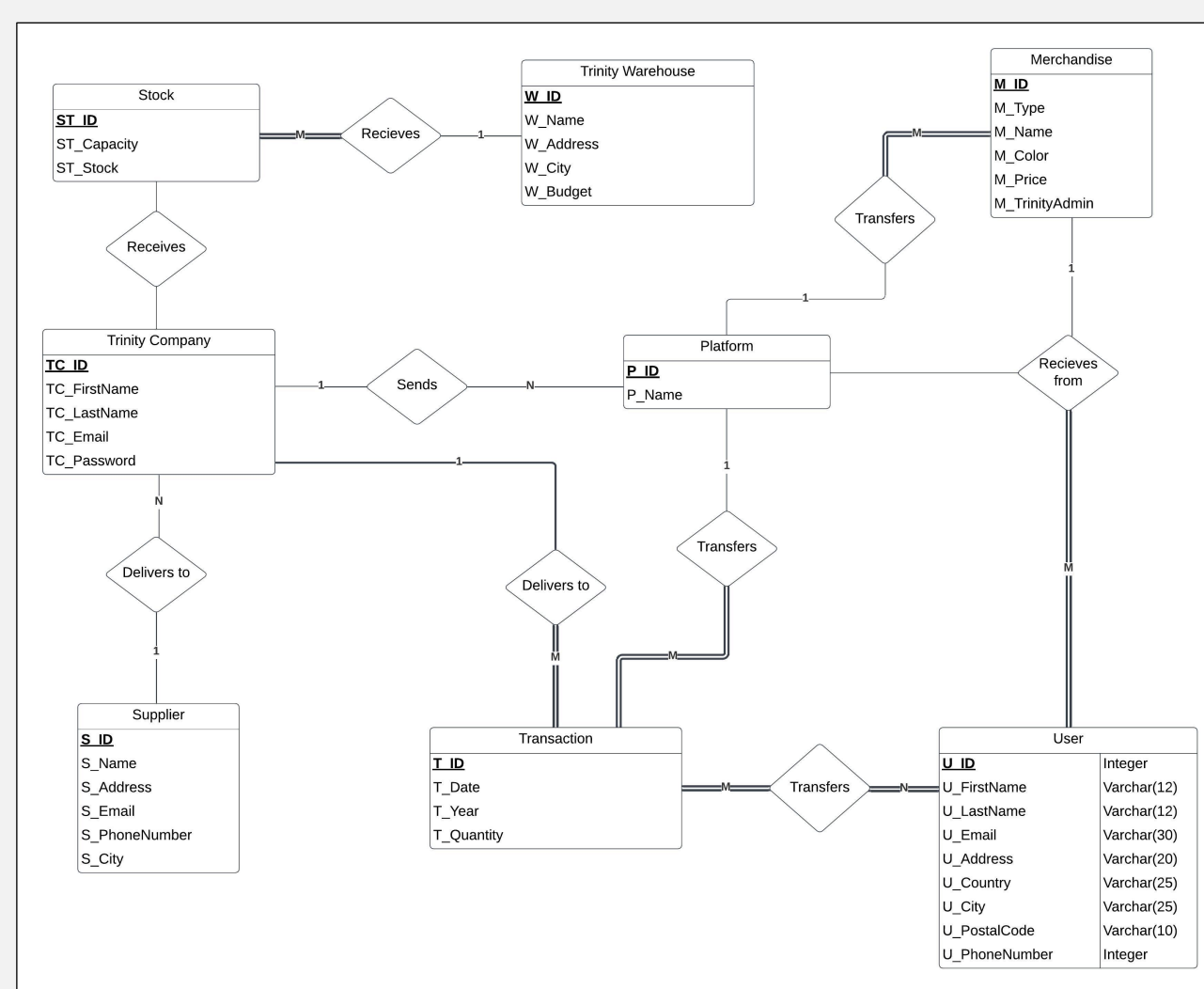


Figure 3: Entity-Relationship Diagram of Trinity's Website

The chosen tech stack for developing this web application prioritizes:

- Integrating tools and software known for their efficiency
- Ensuring robust performance
- Scalability
- Delivering seamless user experience

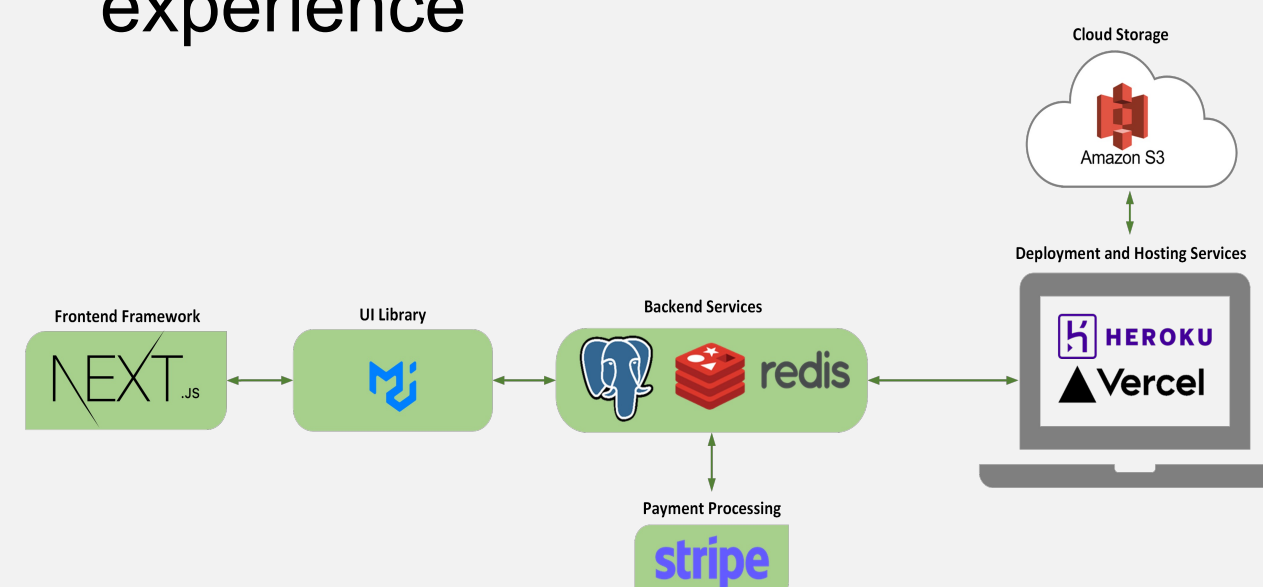


Figure 4: Tech Stack chosen for the development of Trinity's Website

- The website includes a user-facing storefront and an exclusive admin dashboard accessible only to Trinity's owner.
- Within this dashboard, the owner can execute various administrative tasks, including uploading listings to the store and reviewing orders.

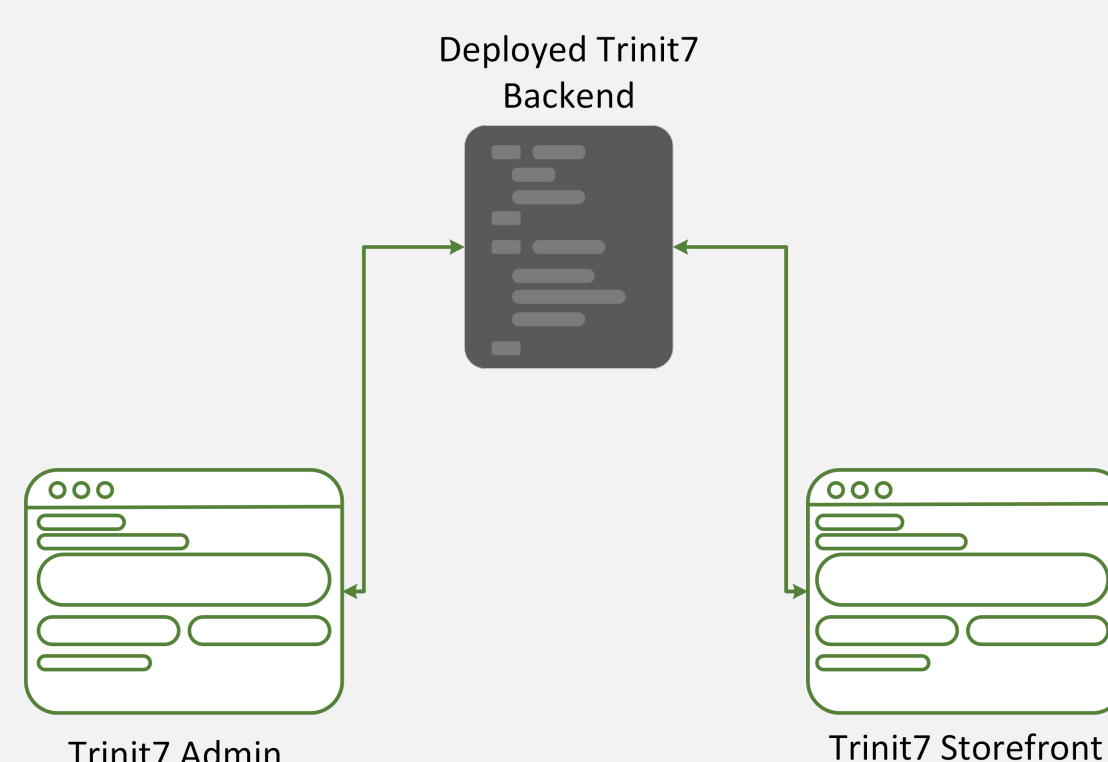


Figure 5: Architecture of the Trinity Website

## 5 Results

- To simulate a user behavior, a load test was performed.

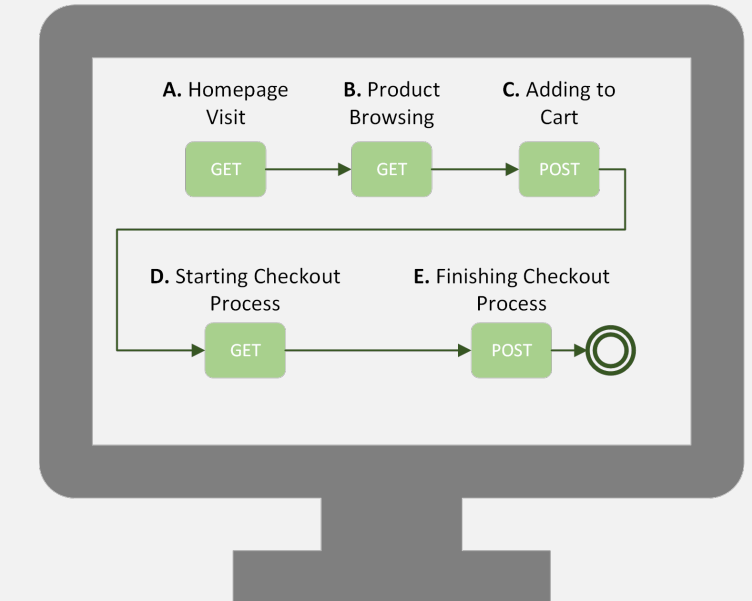


Figure 6: User Behavior Simulated in Apache JMeter

- The average response time of **2.8 seconds** meets our initial goal of under **3 seconds** for load time.

Table 1: Performance results in seconds. RT = Response Time

Table 1: Preliminary Performance Metrics				
Request	Average	Median	Max RT	Throughput
A	0.604	0.494	1.551	3.5/min
B	1.904	0.55	25.31	3.5/min
C	2.312	0.626	25.182	3.5/min
D	1.731	0.353	15.404	3.5/min
E	7.586	0.716	25.225	3.5/min
TOTAL	2.827	0.558	25.31	15.8/min

- This alternative offers a budget-friendly option compared to the state-of-the-art ecommerce solution [9].

Table 2: Cost comparison between solutions

Table 2: Price comparisons between Shopify and our solution			
Our Solution		Shopify	
Deployment Cost	\$20/month	Subscription	\$39/month
Fees	0.5% per transaction	Fees	2% per transaction
Domain Purchase		\$10 one time payment	

## 6 Conclusion

- The monthly maintenance cost is **48.72%** lower than Shopify's \$39 subscription.
- The UI/UX and the overall performance were validated by load testing with Apache JMeter and the Trinity owner.
- The final product provides a fully customized ecommerce website tailored to the client's needs with guaranteed optimal performance.

## References

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