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Digital Marketplace for Babcock University

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Abstract: *Technology has transformed commerce through the rise of e-commerce and digital marketplaces. However, many academic institutions, including Babcock University, lack structured platforms, forcing students and vendors to rely on fragmented and inefficient channels. This study addresses this gap by developing a digital marketplace tailored to the university community. The existing system was analyzed using direct observation, and the new system was designed with UML diagrams. The incremental process model guided development, enabling flexibility and continuous improvement. Implementation utilized HTML, CSS, JavaScript, PHP, and MySQL. Results indicate that the platform streamlines on-campus commerce, supports student entrepreneurship, and enhances the buying and selling experience. SHA-512 cryptographic hashing ensures data security, while service scheduling and real-time notifications improve efficiency and communication. User feedback highlighted the platform's intuitive interface, convenience, and reliability, and performance assessments confirmed its effectiveness. Future enhancements should incorporate AI-driven features and expanded payment options to further optimize the user experience.*

Keywords: Digital Marketplace, eCommerce, Unified Modeling Language (UML), Incremental Process Model, Babcock University

I. INTRODUCTION

Technology has emerged as a pivotal element in the digital era, reshaping healthcare, education, communication, transportation, commerce, and various facets of everyday existence [1]. It has brought about efficiency, ease, and accessibility, while also improving the flow of information and communication [2].One of its most significant effects is the evolution of commerce through electronic commerce (e-commerce). e-commerce encompasses transactions carried out using network communication technologies. It includes the promotion, identification, payment, and distribution of goods and services via the internet [4]. By enhancing market transparency and expanding access for buyers and sellers, e-commerce has transformed the interactions between businesses and consumers [5]. However, it is important to differentiate between e-commerce platforms and digital marketplaces. An e-commerce platform serves as a business's online store, whereas a digital marketplace allows multiple businesses to offer products and services on one platform, functioning like an online shopping center as opposed to an individual store [6]. Platforms such as Amazon, Jumia, and AliExpress demonstrate the transformative potential of digital marketplaces.

Despite global advancements, the adoption of e-commerce and digital marketplaces in developing nations such as Nigeria remains limited [7]. The situation is even more pronounced within academic institutions. Students, who often play dual roles as consumers and entrepreneurs, lack centralized digital solutions to facilitate on-campus commerce.

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Transactions predominantly rely on informal methods such as word-of-mouth, flyers, and social media. These fragmented approaches hinder vendor visibility, restrict consumer access, and create inefficiencies in the buying and selling process. At Babcock University, these issues are apparent. Students and vendors require access to goods and services, which include clothing, food, hairdressing, tailoring, and laundry; however, the lack of a structured marketplace leads to delays, missed appointments, customer dissatisfaction, and lost business prospects. Vendors find it challenging to connect with their intended audience, while consumers encounter difficulties in locating dependable services. The dependence on disorganized and insecure channels adds complexity to transactions, and compromises the potential of campus commerce. Although general e-commerce platforms are available, they do not adequately address the specific needs and policies of academic institutions. Challenges such as managing on-campus deliveries, vendor monitoring, and adhering to institutional regulations remain unaddressed which underscores a significant gap in the digital marketplace landscape.

This research aims to fill the identified gap by creating a digital marketplace customized for Babcock University. The envisioned platform enables secure transactions, provides exhaustive listings of products and services, and integrates vendor management features tailored to the academic environment. By addressing the shortcomings of existing informal systems, the marketplace seeks to improve accessibility, enhance efficiency, and broaden entrepreneurial opportunities, thus fortifying on-campus commerce. Additionally, the study incorporates the SHA-512 cryptographic hashing algorithm to ensure the security of login details and safeguard sensitive user data.

II. REVIEW OF RELATED LITERATURE

Numerous studies have significantly contributed to the development of knowledge on digital marketplaces and the practical implementation of SHA-256 cryptographic algorithms. Prasad *et al.*[8] created a university-focused e-commerce platform, emphasizing its secure transaction processes and effective communication. While students found the system convenient, it was deficient in scheduling features. Ismail *et al*. [9] developed a prototype for a university marketplace that prioritized security and usability but also failed to incorporate service scheduling functionalities. Abraham *et al.*[10] validated through a survey conducted among Nigerian online shoppers that security, trust, and usability are crucial factors for ongoing engagement. Other initiatives targeted at university environments supported these findings. Devega*et al.*[11] launched a web-based marketplace that was meant to replace restricted vendor interactions on WhatsApp. The system proved to be beneficial but lacked delivery, scheduling, and review systems. Dhiman [12] tackled scheduling in an online food ordering system that streamlined operations for small restaurants, albeit its focus was confined to one specific type of scheduling. Kalaskar*et al.*[13] and Lilyana *et al*. [14] developed generic e-commerce websites that showed accessibility and scalability but did not include service-oriented features such as scheduling, vendor management, or customer feedback systems.

Fang *et al.*[15] and Rahman *et al*. [16] also created specialized e-commerce platforms with strong usability and payment functionalities, although both investigations noted the lack of service scheduling options. Attih*et al.*[17] reviewed the challenges in service marketing, highlighting how e-commerce can help address issues related to intangibility and trust. Bananda and Nwagwu[2], Ali *et al.*[18], and Umar [19] concentrated on the Nigerian scenario, demonstrating that barriers such as awareness, infrastructure, trust, and security still hinder adoption, despite increasing interest. Okolie and Ojomo[4] additionally pointed out infrastructural, regulatory, and socio-cultural obstacles obstructing the growth of e-commerce. Moreover, Goyal *et al*. [20] introduced a multivendor platform called Ezycart, which ensured both scalability and functionality but did not include features for reviews and service scheduling. Okpara [21] analyzed customer reviews from Jumia Nigeria, uncovering ethical issues like delivery delays and product quality concerns that erode trust in e-commerce platforms.

Several studies have consistently validated SHA-512 as a robust hash function with significant resistance to collision and preimage attacks, making it well-suited for use as password protection, ensuring transaction integrity, and facilitating digital signatures [22, 23]. Its 512-bit digest size and computational complexity offer a high degree of data protection, with benchmarking studies indicating that SHA-512 operates efficiently on 64-bit systems and, in certain instances, outperforms SHA-256 due to its architectural advantages [24]. Velmurugan and Karthiga[25] further verified SHA-512 resilience, emphasizing its strength against brute-force and rainbow-table attacks. Pandya [26] demonstrated

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that SHA-512 maintains strong cryptographic guarantees and performs effectively on 64-bit architectures. Together, these studies highlight that SHA-512 continues to be a secure and reliable hashing function, providing both computational robustness and operational effectiveness in protecting authentication processes and sensitive transactions in e-commerce.

Current studies into e-commerce platforms at universities focus on general system attributes, user-friendliness, security, and trust, yet largely neglect the introduction of specific cryptographic techniques. Present platforms provide basic functionalities and convenience but are deficient in service-oriented elements such as scheduling, vendor oversight, and customer feedback. While SHA-512 is acknowledged as a highly secure algorithm for safeguarding passwords, ensuring transaction integrity, and facilitating authentication, its actual use within university marketplaces remains unexplored. This reveals a disconnect between theoretical security practices and their practical application. The research aims to fill this gap by creating a SHA-512 protected digital marketplace for Babcock University, combining strong security with an extensive management of products and services and improved accessibility on campus.

III. PROPOSED SYSTEM METHODOLOGY

Several journals, books, and past research were consulted during the course of this study and have been properly referenced in the reference section. In addition, platforms with interfaces similar to the project were studied to obtain useful information relevant to this work. The current patterns of students, as well as the various shops and vendors at Babcock University, were carefully examined to identify their strengths and weaknesses. Data was gathered through direct observation, and a more efficient system, referred to as a digital marketplace for Babcock University was proposed.The incremental process model was adopted for the development of the system. The design was created using various Unified Modeling Language (UML) diagrams, including use case diagrams, class diagrams, and sequence diagrams. Implementation was carried out using HTML, CSS, and JavaScript for the frontend, PHP for the backend, and MySQL as the database.This project was evaluated by one hundred (100) vendors using four (4) user evaluation metrics: usability, performance, compatibility, and effectiveness, through an online questionnaire. A pilot study of the survey was conducted before the full-scale survey to validate the reliability of the questionnaire, using Cronbach's Alpha (α).

IV. PROPOSED SYSTEM DESCRIPTION

The proposed system is a digital marketplace for Babcock University designed to replace informal buying and selling methods like WhatsApp groups. It centralizes product and service listings, enables secure transactions, and improves interactions between students and vendors. Vendors can register businesses, list products, manage orders, and track performance, while buyers can browse, compare, place orders, schedule services, and provide reviews and ratings to ensure credibility. Data for the system was gathered through observation of existing processes, highlighting challenges that informed the platform's design, which supports business registration, product/service management, service scheduling, order tracking, and notifications. University staff oversee and manage platform activities to maintain order and reliability.

The system was developed using the Incremental Model, allowing gradual deployment and iterative improvement. Key phases included requirement analysis, user registration and authentication, product listing and search, checkout and order management, service scheduling, and review integration. During the user registration and authentication phase, the SHA-512 cryptographic hashing algorithm was implemented to enhance security by encrypting user passwords, ensuring data privacy, and preventing unauthorized access. The platform consists of five modules: admin, vendor, product/service management, shopping cart and checkout, and review/rating, collectively ensuring efficient, secure, and trustworthy transactions for the university community. The integration of SHA-512 hashing strengthen the system's security, giving users confidence in the protection of sensitive information such as login credentials.

V. FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS

The functional and non-functional requirements of the Digital Marketplace for Babcock University are shown in Table 1 and 2.

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Table 1: Functional Requirement Digital Marketplace for Babcock University

FRID	Functional Requirements Descriptions
DMP-FR1	The system must allow students, staff, faculty, and vendors to register using their valid university email or ID.
DMP-FR2	The system must store user passwords securely using the**SHA-512 cryptographic hashing algorithm.**
DMP-FR3	The system must authenticate users by verifying entered passwords against SHA-512 hashed passwords.
DMP-FR4	The system must provide password reset functionality using secure token-based verification, with new passwords hashed using the SHA-512 cryptographic hashing algorithm
DMP-FR5	The system must provide administrators with capabilities to manage users, vendors, and products.
DMP-FR6	The system must be able to generate reports on sales, active users, and transactions.
DMP-FR7	The system must secure administrator authentication and sensitive logs using the **SHA-512 hashed password.**
DMP-FR8	The system must enable vendors to add, update, or remove product listings, including product name, description, images, price, and category.
DMP-FR9	The system should allow vendors to mark products as available, out-of-stock, or on promotion
DMP-FR10	The system should allow users to search products by name, category, price, or vendor
DMP-FR11	The system could provide filtering options, including price range, rating, popularity, and availability.
DMP-FR12	The system must allow users to search products by name, category, price, or vendor
DMP-FR13	The system must enable users to add, modify, or remove products from the shopping cart.
DMP-FR14	The system must facilitate secure checkout using multiple payment options
DMP-FR15	The system must generate a receipt for each completed transaction
DMP-FR16	The system must allow users to view order status (pending, confirmed, shipped, delivered).
DMP-FR17	The system should maintain an immutable log of transactions, secured using **SHA-512hashing**to ensure data integrity.
DMP-FR18	The system should notify users via email or in-app notifications about order updates, promotions, and new product listings.
DMP-FR19	The system should allow users to submit product and vendor reviews which could be stored with **SHA-512 hashed identifiers** to prevent tampering
DMP-FR20	The system must provide secure messaging between buyers and vendors
DMP-FR21	The System could utilize **SHA-512 hashing** for integrity verification
DMP-FR22	The system shall allow administrators and vendors to create promotional campaigns
DMP-FR23	The system should store discount codes using **SHA-512 hashing** to prevent unauthorized

Table 2: Non-Functional Requirement Digital Marketplace for Babcock University

Types of NFRs	NFR-ID	Functional Requirements Descriptions
Security	DMP-NFR1	The system must ensure all user passwords are stored securely using the **SHA-512 cryptographichashing algorithm**.
	DMP-NFR2	The system must utilize the SHA-512 cryptographic hashing algorithm for integrity verification of sensitive information, including discount codes, tokens, and transaction data.

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	DMP-NFR3	The system should be protected against common security threats, including SQL injection, XSS, and CSRF attacks.
Performance	DMP-NFR4	The system should load pages within three (3) seconds under normal traffic conditions.
	DMP-NFR5	The system should respond to user requests within three (3) seconds under normal load conditions
	DMP-NFR6	The system should optimize SHA-512 hashing operations to avoid noticeable delays in user interactions
Reliability	DMP-NFR7	The system should have a minimum uptime of 99%.
	DMP-NFR8	The system should implement automated recovery and backup mechanisms to maintain service continuity
Usability	DMP-NFR9	The system must have an intuitive interface suitable for students, faculty, staff, and vendors
	DMP-NFR10	The system must be mobile-responsive and accessible on desktop, tablet, and smartphone devices.
	DMP-NFR11	The system could provide a responsive design that adapts layout and functionality dynamically to different screen sizes, resolutions, and orientations.
Scalability	DMP-NFR12	The system must support growth in the number of users, vendors, products, and concurrent transactions without performance degradation.
	DMP-NFR13	The system should ensure that cryptographic hashing operations remain efficient as the user base increases.
Portability	DMP-NFR14	The system should be accessible on major web browsers, including Chrome, Firefox, Safari, and Edge.
	DMP-NFR15	The system should support multiple operating systems, including Windows, macOS, Android, and iOS.
Compliance	DMP-NFR16	The system must comply with the Nigerian Data Protection Regulation (NDPR).
	DMP-NFR17	The system must conform to Babcock University ICT policies regarding online platforms and digital transactions.

VI. SYSTEM DESIGN MODELS

The proposed system was modelled using a Use case diagram. The Actors are students, faculty, staff, vendors, administrator andthe system. The use case diagram is shown in Figure 1.

VII. IMPLEMENTATION OF THE PROPOSED SYSTEM

The proposed system is a digital marketplace designed to streamline buying and selling between students and vendors at Babcock University, replacing informal methods such as WhatsApp groups and word-of-mouth. It provides a centralized platform for secure transactions, product and service listings, and enhanced interaction between buyers and sellers. Vendors can register their businesses, manage orders, list products or services, and monitor performance, while buyers can browse, compare prices, place orders, schedule services, and leave verified reviews and ratings. The system improves business registration, vendor visibility, and student access to diverse offerings, while service-based vendors can manage bookings and appointments, and customers receive notifications, delivery services, and wishlist options. A delegated university staff member oversees platform activities, approves registrations, and resolves disputes. The platform includes five modules: Admin, Vendor, Product and Service, Shopping Cart and Checkout, and Review and Rating. Developed with PHP for server-side functionality and JavaScript for client-side interactivity, the system ensures security by protecting passwords and other sensitive information using the SHA-512 cryptographic hashing algorithm.

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It was rigorously tested through unit, integration, and system testing to ensure reliability, cohesive operation, and overall performance. Some of the snapshots of the implementation are shown in Figure 2, 3, 4 and 5.

Figure 1: Use Case diagram for Digital Marketplace for Babcock University

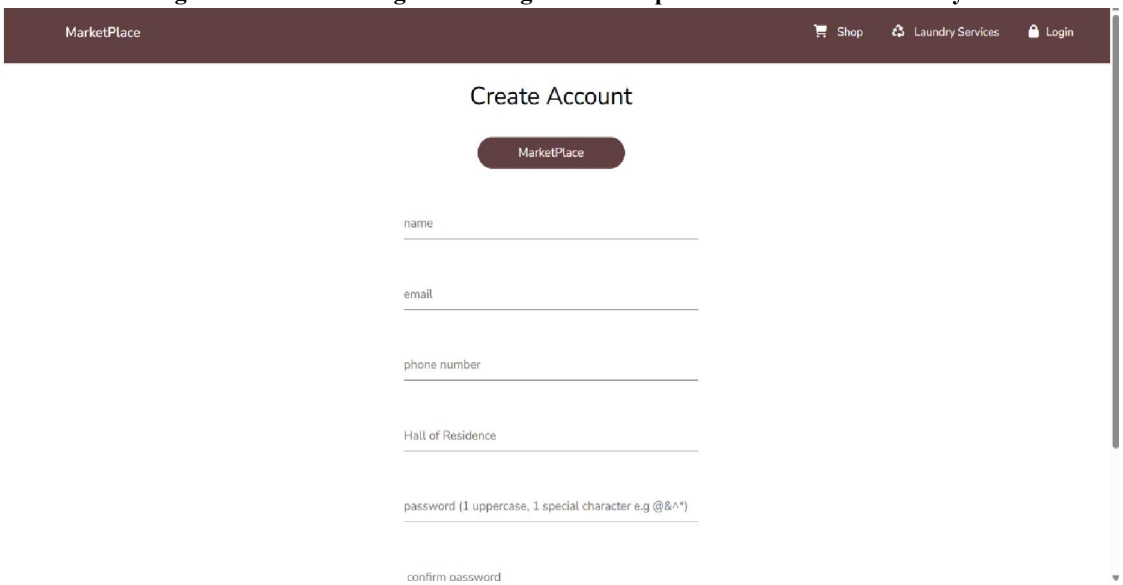

Figure 2: Student's Registration Page

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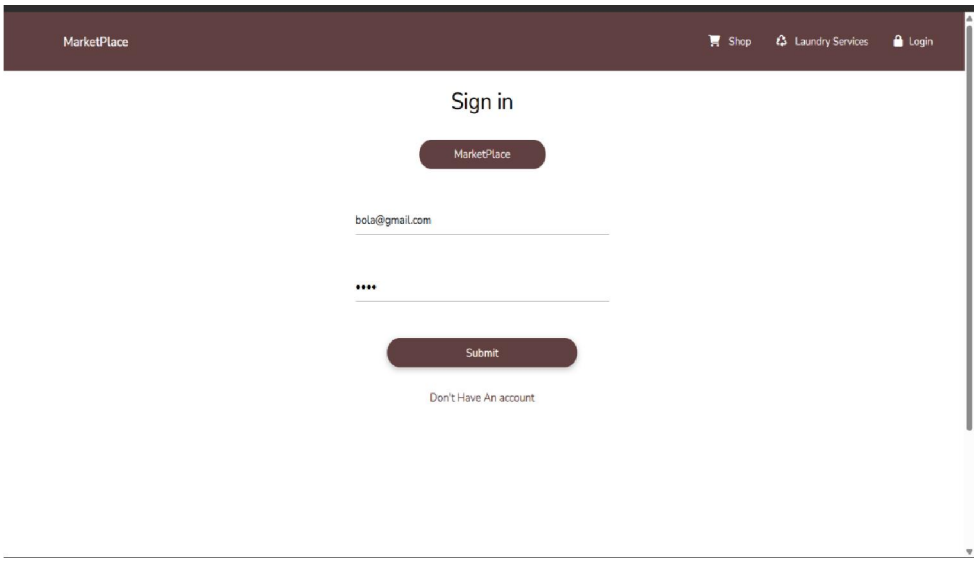

Figure 3: Student's Login Page

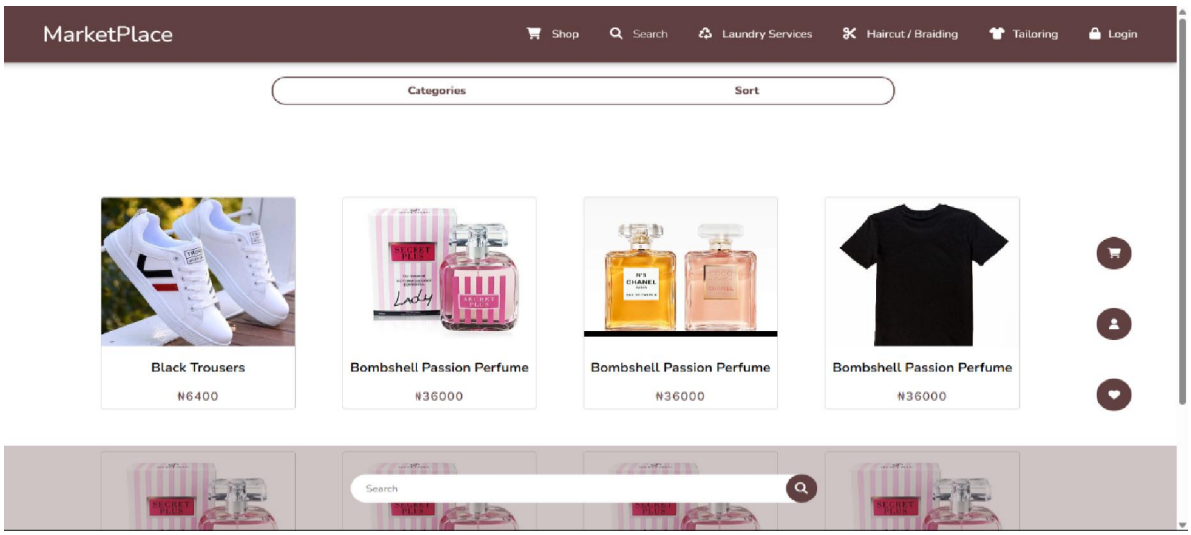

Figure 4: Product Listing Page

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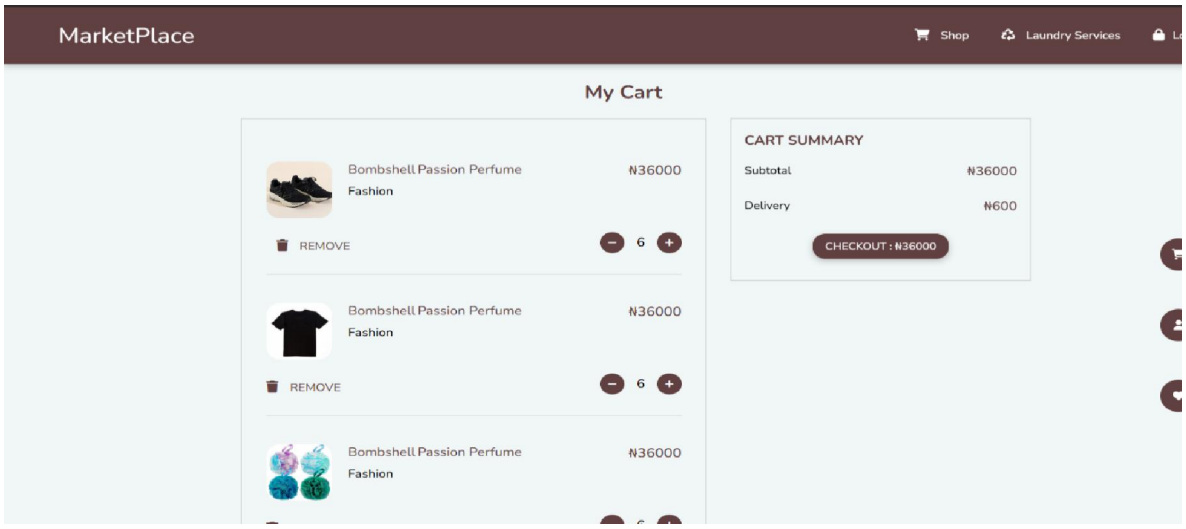

Figure 5: Cart and Checkout Page

VIII. RESULTS AND DISCUSSION OF RESULTS

The digital marketplace has transformed campus commerce by providing a centralized, secure, and efficient platform for students to buy and sell products and services. Vendors can list their offerings, while customers can easily browse, compare, and purchase items. Multi-role authentication restricts access to verified users, and SHA-512 cryptographic hashing protects sensitive data, ensuring robust security. Service scheduling minimizes wait times, and real-time notifications keep users updated on orders and bookings, preventing miscommunications.User feedback is overwhelmingly positive, emphasizing the platform's intuitive interface, ease of use, and convenience. Performance assessments demonstrate reliable speed, functionality, and overall effectiveness, establishing the system as a powerful tool for campus commerce.

User evaluation was conducted through an online questionnaire that uses a 5-point Likert scale to assess the performance, usability, compatibility, and effectiveness of the proposed system. The internal consistency of the questionnaire was examined using Cronbach's alpha, which quantifies the internal consistency on a standardized scale from 0 to 1. The analysis yielded a coefficient of $\alpha = 0.918$, which exceeds the commonly accepted threshold of 0.70, thereby demonstrating a high level of reliability that indicates that the questionnaire is highly dependable and that the collected data can be confidently trusted. This result confirms that the measurement metrics are consistent and that the instrument can be considered a valid and trustworthy tool for data collection. The detailed evaluation results for performance, usability, compatibility, and effectiveness are presented in Table 3 and illustrated in Figure 6.

Table 3: Users' Evaluation

Users' Evaluation Metrics	Value (%)
Performance	96%
Usability	98%
Compatibility	95%
Effectiveness	97%

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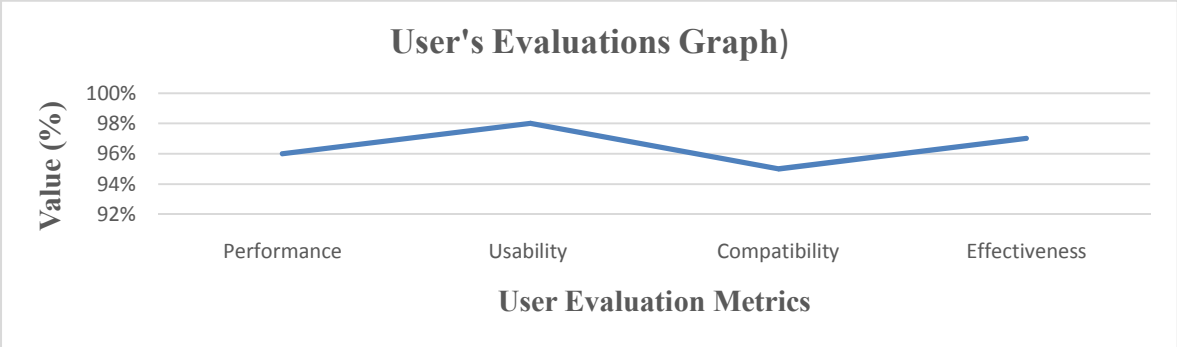

Figure 6: Users' Evaluation

X. CONCLUSION

The development of a digital marketplace at Babcock University represents a significant advancement in campus commerce, enhancing convenience, accessibility, and student entrepreneurship. By integrating features such as product and service listings, multi-role authentication, service scheduling, and vendor management, the platform enables smooth transactions and centralized marketplace operations. It supports small vendors by expanding their reach and promoting digital transformation, while the use of the SHA-256 cryptographic hashing algorithm ensures the security and integrity of user data and transactions. Future enhancements, including AI-powered smart filtering, recommendation systems, and robust customer review mechanisms, can further improve user experience, engagement, and trust, making the platform a sustainable model for university-focused digital marketplaces.

REFERENCES

[1] S. Singh and T. S. Vijay, "Technology roadmapping for the e-commerce sector: A text-mining approach," Journal of Retailing and Consumer Services, vol. 81, p. 103977, 2024. [Online]. Available: https://www.sciencedirect.com/science/article/abs/pii/S096969892400273X

[2] R. A. Bananda and K. O. Nwagwu, "The changing face of e-commerce in Nigeria: Prospects and challenges," The Academy of Management Nigeria (TAMN), vol. 5, no. 3, pp. 1228–1234, 2021. [Online]. Available: www.ijtsrd.com/papers/ijtsrd38018

[3] Z. Chen, "The evolution of e-commerce: From traditional e-commerce to live streaming sales," in SHS Web of Conferences, vol. 199, p. 04003, EDP Sciences, 2024. [Online]. Available: https://www.shs-conferences.org/articles/shsconf/abs/2024/19/shsconf_iclrc2024_04003/shsconf_iclrc2024_04003.html

[4] U. C. Okolie and A. H. Ojomo, "E-commerce in Nigeria: Benefits and challenges," Humanities & Social Sciences Latvia, vol. 28, no. 2, 2020. [Online]. Available: https://doi.org/10.22364/hssl.28.2.05

[5] E. Groenewald and O. K. Kilag, "E-commerce inventory auditing: Best practices, challenges, and the role of technology," International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence (IMJRISE), vol. 1, no. 2, pp. 36–42, 2024. [Online]. Available: https://www.researchgate.net/profile/Elma-Groenewald-2/publication/378498262_E-commerce_Inventory_Auditing_Best_Practices_Challenges_and_the_Role_of_Technology/

[6] J. Miozzo, "E-commerce vs. marketplace: How and when to choose each?" 2021. [Online]. Available: https://vtex.com/en-us/blog/ecommerce-vs-marketplace/

[7] S. Hendricks and S. D. Mwapwele, "A systematic literature review on the factors influencing e-commerce adoption in developing countries," Data and Information Management, vol. 8, no. 1, p. 100045, 2024. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S2543925123000190

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[8] A. Prasad, Y. Tandon, N. Samal, N. Kumar, and S. K. Pathy, "An e-commerce platform for campus: Enabling buying, selling, and renting," International Journal of Scientific Research in Engineering and Management, vol. 7, no. 3, 2024. [Online]. Available: https://doi.org/10.55041/ijsrem27185

[9] M. Ismail, A. Aziz, F. Nor, S. Aris, and S. Zambri, "Student online marketplace for university community," Indonesian Journal of Electrical Engineering and Computer Science, vol. 19, no. 1, pp. 420–427, 2020. [Online]. Available: https://doi.org/10.11591/IJEECS.V19.I1.PP420-427

[10] G. T. Abraham, E. F. Osaisai, N. Dienagha, and A. Ineyekineye, "Usability, security and trust of e-commerce websites: The effect on the Nigerian e-shopper," Asian Journal of Research in Computer Science, vol. 10, no. 4, pp. 58–68, 2021. [Online]. Available: https://doi.org/10.9734/ajrcos/2021/v10i430250

[11] M. Devega, W. Walhidayat, and Y. Yuhelmi, "Implementation of web-based of e-marketplace for UMKM at XYZ University," Sinkron: Jurnal dan Penelitian Teknik Informatika, vol. 6, no. 4, pp. 2391–2399, 2022. [Online]. Available: https://www.jurnal.polgan.ac.id/index.php/sinkron/article/view/11761

[12] K. Dhiman and M. Phansikar, "Online food ordering management system," International Journal for Research in Applied Science and Engineering Technology, vol. 9, no. 7, pp. 2096–2107, 2021. [Online]. Available: https://doi.org/10.22214/ijraset.2021.36835

[13] S. Kalaskar, P. Dalimkar, D. Shegokar, S. Ghagare, and S. N. Khandare, "Design and development of ecommerce website," International Journal of Advanced Research in Science, Communication and Technology (IJARSCT), vol. 3, no. 6, 2023. [Online]. Available: https://doi.org/10.48175/IJARSCT-9368

[14] F. Lilyana, T. Tahmat, and I. Rijayana, "Development e-commerce web site," Adpebi International Journal of Multidisciplinary Sciences, vol. 1, no. 1, pp. 196–205, 2022. [Online]. Available: https://doi.org/10.54099/aijms.v1i1.277

[15] G. Fang, J. Gao, and L. Liu, "Design and implementation of home online store system based on PHP framework," Engineering Advances, vol. 3, no. 2, 2023. [Online]. Available: https://www.hillpublisher.com/UpFile/202306/20230613191004.pdf

[16] M. A. Rahman, M. A. Khan, and M. R. Islam, "Design and implementation of a web-based electronic-commerce system," European Journal of Engineering and Technology Research, vol. 7, no. 2, pp. 124–127, 2022. [Online]. Available: https://doi.org/10.24018/ejeng.2022.7.2.2789

[17] O. K. O. K. O. N. Attih, I. J. Ikpe, and A. A. Mfon, "Service marketing issues: A review," AKSU Journal of Management Sciences, vol. 3, no. 1, pp. 45–67, 2017. [Online]. Available: https://aksujomas.org.ng/articles/21/12/service-marketing-issues-a-review/

[18] U. T. Ali, B. Usman, A. Kachalla, and A. Ali, "Investigating factors influencing electronic commerce adoption in developing countries: The case of Nigeria," Journal of Emerging Technologies and Innovative Research, vol. 8, no. 6, 2021. [Online]. Available: http://www.jetir.org/

[19] U. M. Umar and A. M. Ibrahim, "Intention toward acceptance of online shopping among consumers in Kano, Nigeria: Application of UTAUT model approach in a Nigerian context," International Journal of African and Asian Studies, vol. 64, pp. 1–9, 2020. [Online]. Available: https://doi.org/10.7176/jaas/64-01

[20] D. Goyal, E. Gaur, and D. A. S. Aurangzeb Hussain, "Ezycart: Multivendor e-commerce website," International Journal for Research in Applied Science & Engineering Technology (IJRASET), vol. 9, no. 8, p. 2867, 2021. [Online]. Available: https://doi.org/10.22214/ijraset.2021.37176

[21] N. Okpara, "Ethics and the prospect of e-commerce platforms in doing business in Nigeria," in Communication Management. IntechOpen, 2021.

[22] A. Gupta, N. Banakar, and C. Kumar, "Design and implementation of an efficient fingerprint authentication algorithm using SHA-512," in 2024 Third International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE), Apr. 2024, pp. 1–7. [Online]. Available: https://ieeexplore.ieee.org/abstract/document/10548466/

[23] S. P. Patra and M. Rani, "Evaluation and categorization of hashing algorithms based on their applications," IAENG International Journal of Applied Mathematics, vol. 55, no. 3, 2025. [Online]. Available: https://www.proquest.com/intermediateredirectforezproxy

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[24] S. Windarta, S. Suryadi, K. Ramli, B. Pranggono, and T. S. Gunawan, "Lightweight cryptographic hash functions: Design trends, comparative study, and future directions," IEEE Access, vol. 10, pp. 82272–82294, 2022. [Online]. Available: https://ieeexplore.ieee.org/abstract/document/9846993/

[25] T. Velmurugan and S. Karthiga, "Security based approach of SHA 384 and SHA 512 algorithms in cloud environment," Journal of Computer Science, vol. 16, no. 10, pp. 1439–1450, 2020. [Online]. Available: https://thescipub.com/abstract/jcssp.2020.1439.1450?utm_source=chatgpt.com

[26] M. Pandya, "Performance evaluation of hashing algorithms on commodity hardware," arXiv preprint arXiv:2407.08284, 2024. [Online]. Available: https://arxiv.org/abs/2407.08284