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INTERNATIONAL UNDERGRADUATE RESEARCH INNOVATION, INVENTION AND DESIGN

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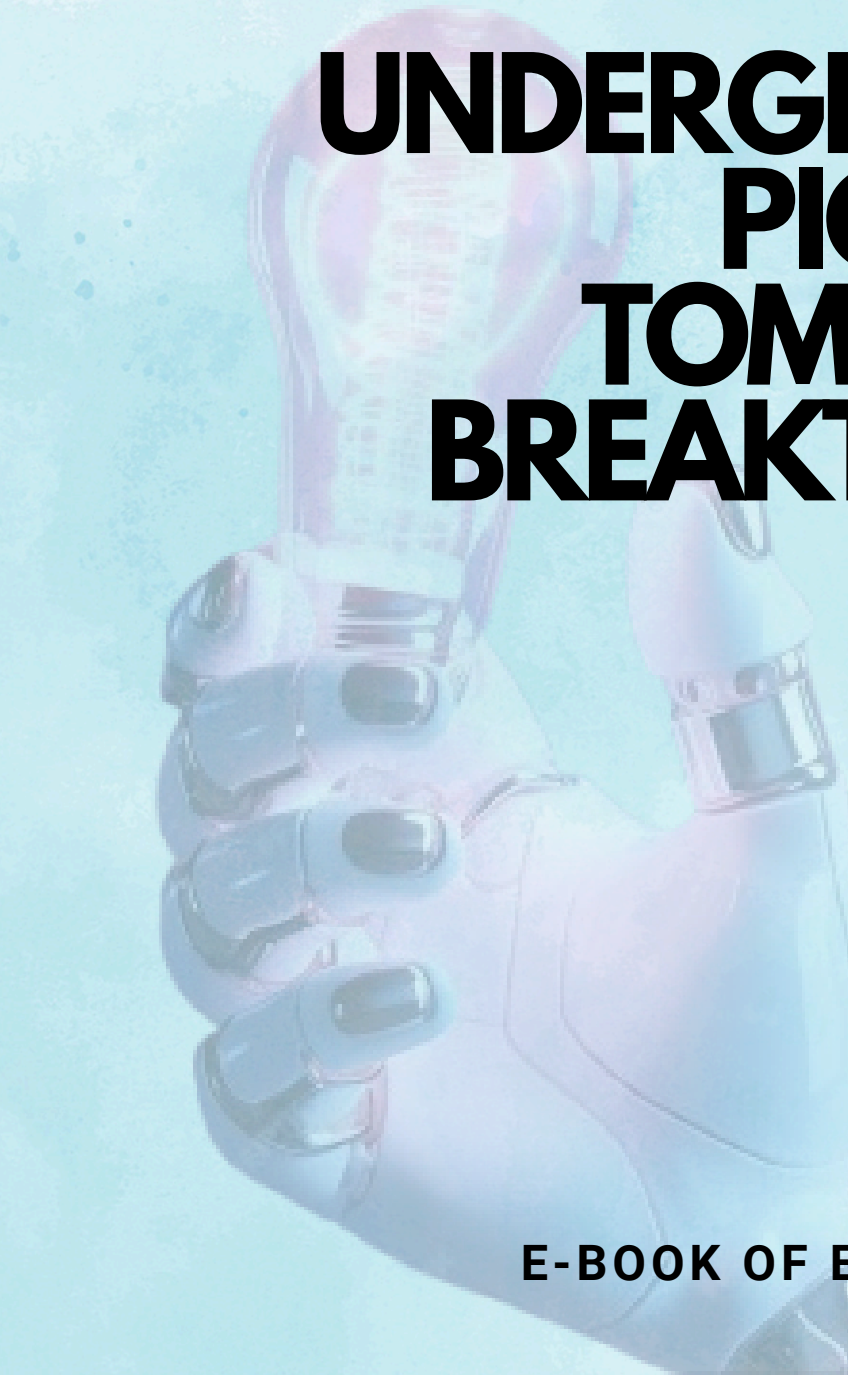

E-BOOK OF EXTENDED ABSTRACTS

TRANSPORTRIX-SHIPMENT MANAGEMENT SYSTEM

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ABSTRACT

Transportrix is a web-based shipment application system that facilitates Sustainable Development Goal (SDG) 9, which advocates for resilient infrastructure, promotes inclusive and sustainable industrialisation, and fosters innovation. This system will enhance the existing manual shipping management system of MSF Maju Global. The manual method utilises WhatsApp applications to manage customer shipment orders and assign lorry drivers. This will result in human errors, including order inaccuracies, duplicate driver signings, and delays. This product employs the waterfall development technique, which comprises five phases: requirements, design, implementation, verification, and maintenance. The functions provided by Transportrix are: 1) enable customers to place shipment orders online, 2) administrators can view and update the order's status, 3) assign a lorry driver and truck to fulfil the shipment, and 4) generate reports. This program is a highly beneficial solution that will enhance the company's efficiency by conserving management time and resources through streamlined planning, execution, and tracking of shipment orders.

Keywords: Web-Based Application, Shipment Management System

INTRODUCTION

The growth of logistics and transportation management corresponds with Sustainable Development Goal (SDG) 9: Industry, Innovation, and Infrastructure. This target underscores the development of resilient infrastructure, the advancement of sustainable industrialisation, and the encouragement of innovation (United Nations, 2015). In a more digital business environment, firms like MSF Maju Global must implement digital shipping management systems to maintain competitiveness and improve operational efficiency. These technologies modernise infrastructure, augment industrial capacity, and guarantee dependable delivery services by automating processes and diminishing reliance on outdated human methods. This clearly corresponds with the goals of SDG 9.

Presently, MSF Maju Global uses a manual system utilising the WhatsApp application to receive customer shipment requests and allocate lorry drivers. This method is readily accessible; nonetheless, it is susceptible to errors and operational inefficiencies. Common issues include incorrect order details, reassigning drivers to the same task, and delivery delays, all of which diminish service quality and client satisfaction. This deficient communication system hinders the organization's growth by impairing its capacity to manage additional orders and address logistical challenges. These issues underscore the necessity of a structured and automated approach that mitigates risks and ensures seamless operations.

The concept for the Transportrix Shipment Management System was inspired by the success of Lalamove, a logistics platform that employs technology to allocate drivers and monitor orders in real time, revolutionising last-mile delivery (Lalamove, 2021). Transportrix employs automation and intuitive interfaces to enhance freight management for MSF Maju Global, grounded in these innovative concepts. The project employs the Waterfall development model, a recognised methodology wherein system requirements, design, implementation, testing, and deployment are executed sequentially (Balaji, S., & Murugaiyan, 2012). This ensures that the development process is structured and methodical. This strategy ensures clarity in developmental stages and minimises errors by delineating deliverables.

The Transportrix Shipment Management System has four primary objectives: (i) to automate the acquisition of shipment orders from customers, (ii) to facilitate the assignment of lorry drivers and trucks, (iii) to provide users with a straightforward method for real-time shipment status tracking, and (iv) to expedite the processing of shipment orders. Transportrix aims to deliver a comprehensive solution that addresses the operational requirements of MSF Maju Global by rectifying the deficiencies of the manual system and implementing optimal practices in digital logistics. Ultimately, the process facilitates the generation of innovative concepts for businesses while ensuring that shipping is executed promptly, precisely, and to the satisfaction of the consumer.

RESULTS AND DISCUSSION

This system has three levels of users, which are Administrator, Driver and Customer. The section below will be discussed based on the user's type.

Administrator

Figure 1 shows the main page for Administrator as the highest level of user. The administrator is allowed to add, update, delete and view information of the administrators, truck drivers, orders, shipments and trucks. And also, can print the receipt for each order.

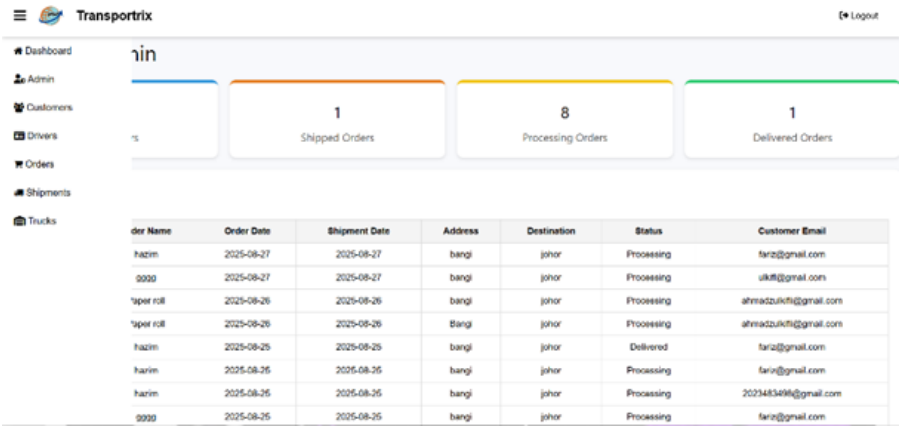

Figure 1: Main Page for Administrator

Figure 2 shows the page to update the truck driver's details when the administrator chooses the driver tab.

Figure 2: User interface – update the truck driver's details

As mentioned earlier, the administrator is allowed to assign the driver for the shipment order. Figure 3 shows the page to add a new shipment order for the driver. The administrator should insert the customer and order details, and also which truck driver is assigned to accomplish the task.

Figure 3: User interface – add new shipment order

Driver

Then, the second level of user is the driver. Figure 4 shows the main page for the driver. The driver is allowed to update and view the shipment order assigned to the driver, and can also update their availability, either available or not.

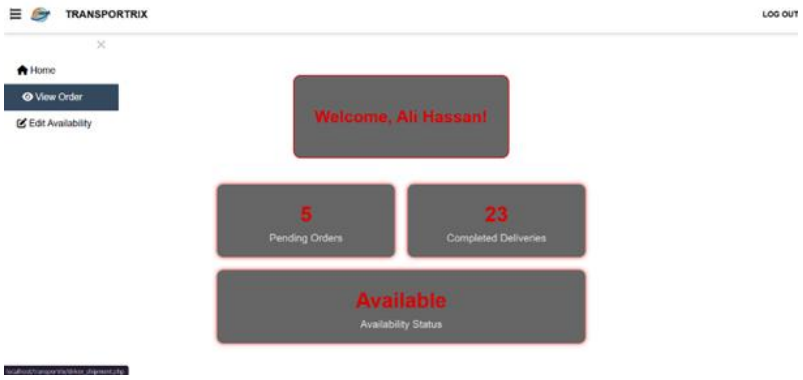

Figure 4: Main Page for Drivers

Figure 5 shows the order page assigned to the driver. This page will display after the driver chooses the View Order button.

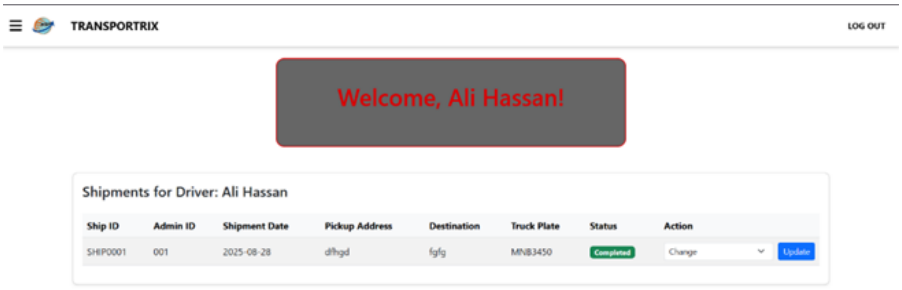

Figure 5: Order Page for Drivers

Customer

Figure 6 shows the main page for the customer. The customer is allowed to: 1) create and view an order, 2) update the customer's profile, 3) view About Us (details of the founder), and 4) view Contact Us (details to contact MSF Maju Global).

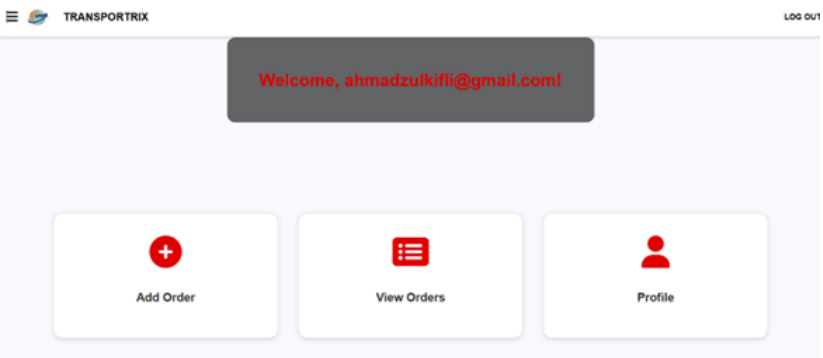

Figure 6: Main Page for Customer

This system provides advantages to both the firm personnel and the clients in comparison to the manual system. However, for future enhancements, the system might be developed as a mobile application. This is due to the system's enhanced accessibility. Ultimately, everyone today possesses a cell phone for communication purposes.

CONCLUSION

The development of the Transportrix Shipment Management System signifies a notable improvement in overcoming the operational constraints of conventional manual logistics methods. The implementation of a structured web-based platform improves accuracy, decreases redundancy in driver assignments, and mitigates delays that previously compromised service quality. The application's primary functions—order placing, driver and vehicle allocation, real-time status updates, and receipt generation—enhance logistics management by increasing openness and accountability. In accordance with Sustainable Development Goal (SDG) 9, Transportrix enhances resilient infrastructure and sustainable industrialisation by implementing digital innovations that improve organisational efficiency and customer happiness.

Moreover, the initiative demonstrates the potential for scalability and enduring significance within the logistics industry. Future improvements, including mobile application development, may enhance accessibility for consumers and drivers, promoting a more responsive and user-focused service. The technology offers MSF Maju Global rapid operational enhancements and equips the company to respond to evolving industry trends influenced by digital transformation. Transportrix exemplifies how technology innovation in shipping management may yield sustainable solutions, improve competitiveness, and facilitate overarching goals of digital industrial progress.

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