FACULTY OF SCIENCE AND ENGINEERING SCHOOL OF COMPUTING

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Assignment One: Case Study Modeling and Analysis

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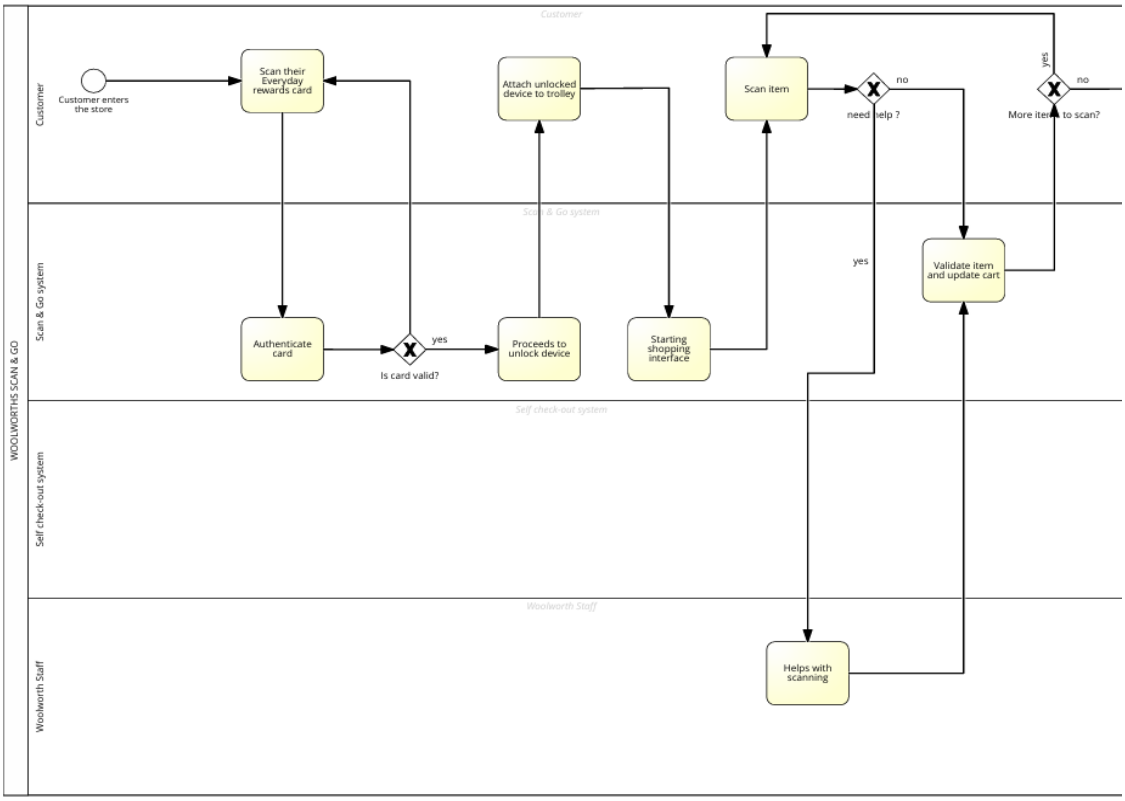
INTRODUCTION:

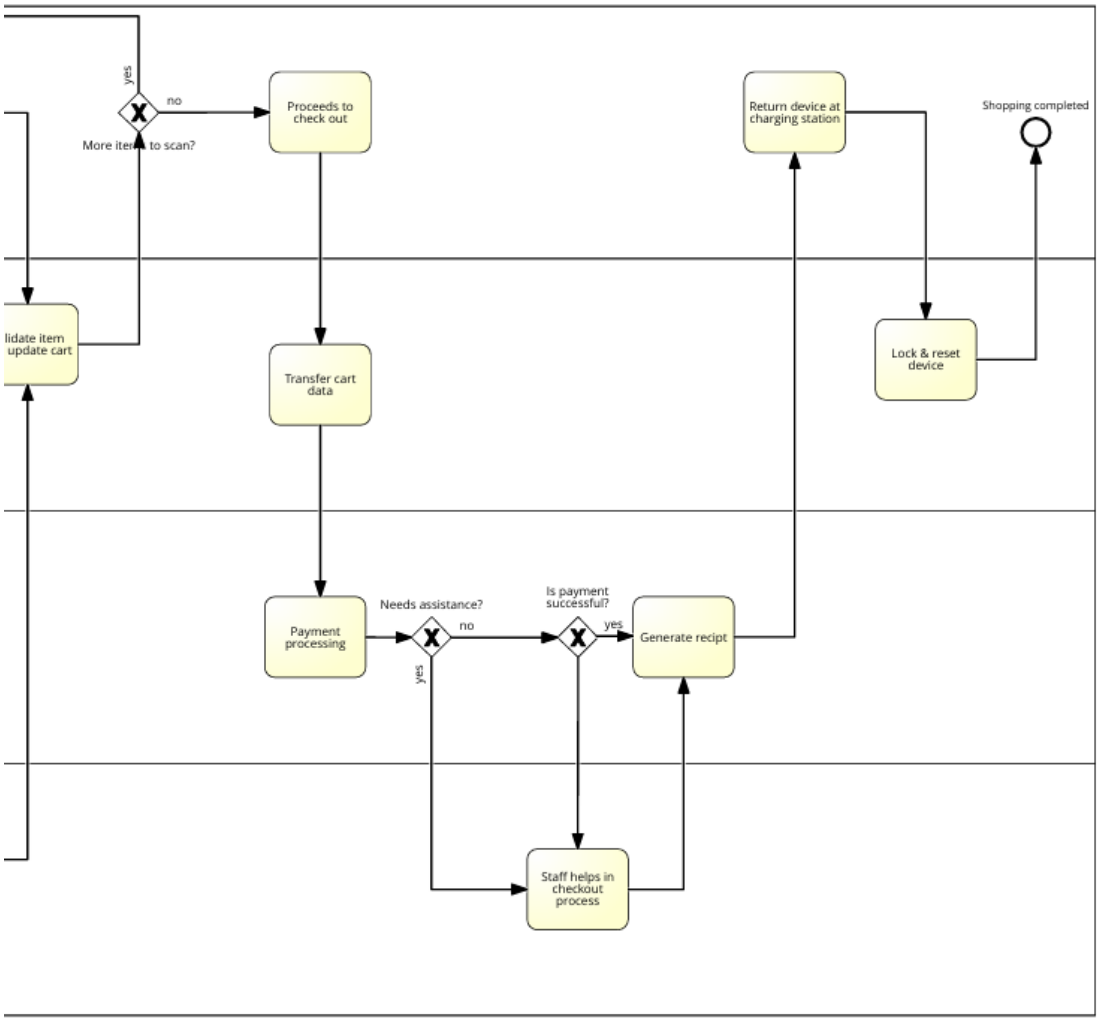
Technology-driven approaches that seek to enhance customer satisfaction and operational effectiveness are having a growing impact on the retail environment today. One such innovation is Woolworths' Scan&Go Trolley system, which allows customers to scan, bag and track their spending in real time, thus streamlining the shopping experience. The work here conveys a thorough examination of the existing (AS-IS) process model of the Scan&Go Trolley system, identifying strengths, shortcomings, and critical issues to serve as a foundation for suggesting a TO-BE model that addresses current challenges.

AS-IS MODEL:

The AS-IS process model for the Scan&Go Trolley system is designed using BPMN 2.0 standards and consists of four key lanes that reflect the system's principal actors within a single pool: Customer, Scan&Go Trolley System, Self-Checkout Terminal, and Woolworths Staff (Support/Assistance). When the consumer first enters the store, they scan their Everyday Rewards card to unlock a device that is connected to the trolley. After the card has been successfully authenticated, the system permits the user to connect the device and start shopping. The cart is updated instantly when each scanned item is verified. The process ends with a self-service checkout, when money has been paid and the device is returned.

Woolworths scan & go AS-IS Model





The process's benefits and strengths

Real-Time Cart Updates: The AS-IS model's real-time cart updates allow customers to closely track their spending while they shop.

Automation and Speed: Under the best circumstances, automated validation processes and self-service checkout reduce the need for human support, potentially accelerating the shopping process.

ISSUES FACED IN THE CURRENT SYSTEM :

Even if the present system is accurate, a number of problems have been found that may hinder the system's overall effectiveness and user satisfaction:

Scanning Fresh Produce:

Problem: Customers get lost by the present model's lack to identify the fresh produce and standard items, especially if items need to be weighed.

Impact: Consumers like Jenny have expressed annoyance and more shopping time as a result of having no idea where and how to scan or weigh produce.

Usability and User Interface:

Problem: The trolley device's present general interface can make it difficult for some customers to use. It can be difficult to use small screens and non-intuitive navigation, especially for non-techies.

Impact: This results in a steep learning curve, which reduces the system's perceived ease and overall adoption.

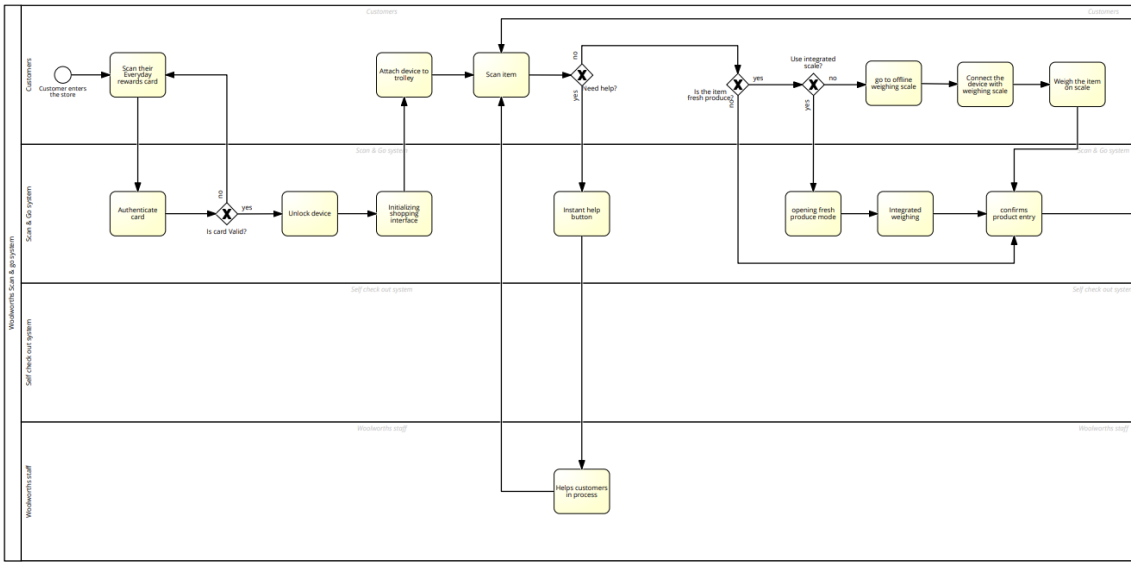
Assistance required:

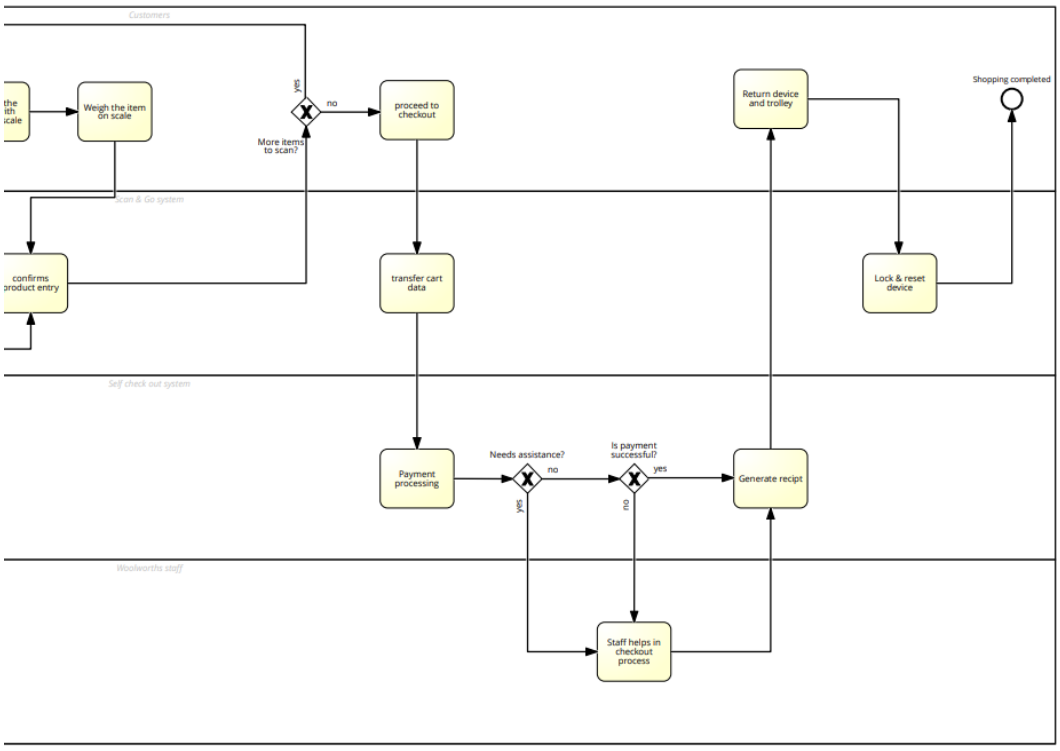
Problem: The present model doesn’t have any direct mechanism to call for support when needed. Customers are required to call out for help manually.

Impact: This leads to increase in frustration and dissatisfaction among customers especially with people who prefer in-person interactions.

TO-BE MODEL:

TO-BE PROCESS





To solve the issues faced in the current model, there is a proposed TO-BE solution BPMN 2.0 model, which tries to resolve the issue of fresh produce shopping and eases to get the required help or support by the staff

There can be a dual-technology enhancement which further digitalize the current system leading it to streamlining shopping experience and reduced customer dissatisfaction.

1. Integrated weighing system for fresh produce:

   The suggested remedy incorporates a weighing system inside the digital cart. When buying fresh produce, customers have two options attributable to this system:

   I. Option for Integrated Weighing:

   Customers are given the choice to use the integrated weighing scale that is part of the cart when they choose the "Fresh Produce" option on the device screen.

   The scale weighs the produce automatically when the product is placed on the scale and it computes and shows the price instantly. Errors are decreased and the amount of time needed for human involvement is decreased by this smooth integration.

   There are some researches showing the designing & developing an integrated weighing scale trolley.
   According to Akhila et al. (2024), they proposed a smart shopping trolley system with advanced deep learning models along with a range of integrated sensors to give a seamless shopping experience. The system starts with a membership card same as rewards card. A weighing sensor ensures the product weight as it is added by customers.

   To integrate such weighing scale, they have used tech devices such as load cell, IoT Devices like RFID, Raspberry Pi, etc. An electrical signal whose magnitude is directly proportionate to the force being measured is produced by a transducer called a load cell. The load cell is the central component of all electric scales and weighing devices. (Bhumika et al., 2019)

   II. Using external weighing station:

   Customers can use traditional weighing scale, if they want to. To sync the scale with the trolley device, we can use an inventive interconnectivity feature using barcode scanning or QR code given on the trolley. Once the goods have been weighed, the weight and price are automatically updated in the customer's cart. Technologies like Bluetooth Low Energy, NFC (Near Field Communication), and cloud-based point-of-sale integration could successfully enable this integration.

2. Instant help features

In addition to the upgrades to the weighing system, the recommended fix also has a feature called "Instant Help" that is designed to help customers right away if they run across issues while they are shopping.

Implementation: The trolley's touchscreen interface now has an "Instant Help" button. This button is clearly displayed and easily accessible on all screens, allowing customers to seek

instant support at any time during their purchasing experience.

Automated alarm System: Pressing the help button sends an immediate notification to Woolworths staff. Staff can offer prompt and focused assistance because the alert contains the customer's actual location (for example, "Aisle 1") and the type of request.

BENEFITS OF NEW PROPOSED SYSTEM:

- This feature improves customer support by minimizing wait times for assistance. It ensures that customers who are unfamiliar with the technology can rapidly obtain human assistance.
- With providing an alternative of immediate assistance, the system gets easier to use and further available, and could improve satisfaction among consumers and adoption rates in general.

COMPARISON AND CONTRAST: AS-IS & TO-BE MODEL:

Overview of the AS-IS Model

The current AS-IS architecture for Woolworths' Scan&Go trolley system is intended to offer customers with a more efficient shopping experience. In this model:

Process Flow: As customers enter the store, they scan things while they shop, connect a tablet-like device to their trolley and use their Everyday Rewards card to unlock the gadget from a charging outlet. The system updates the cart in real time, and customers pay at a self-service checkout.

Characteristics:

The same integrated scanning mechanism is used to process all items, regardless of their type, according to the uniform scanning approach.

Limited Support: There is no integrated mechanism for immediate assistance; clients must rely on external help if they experience problems.

Simplicity: The process is straightforward, with a primary focus on enabling self-service.

TO-BE MODEL OVERVIEW:

The suggested TO-BE model adds important improvements to solve the concerns found while maintaining the essential features of the AS-IS paradigm:

System of Integrated Weighing:

Customers are given the option to use the trolley's built-in weighing scale or connect via barcode scanning to a physical offline scale when they select the "Fresh Produce" option on the device.

This improvement minimises errors and reduces customer misunderstanding by guaranteeing precise, real-time pricing for fresh food.

The Instant Help Feature

The device's UI incorporates a button labelled "Instant Help." Customers can use this button to ask in-store employees for help right away.

By providing geographical information (such as "Aisle 1"), the alert guarantees that assistance is given quickly without interfering with the main shopping activity.

KEY CONTRASTS

The AS-IS model has a one-size-fits-all scanning mechanism and a comparatively straightforward linear procedure.

The TO-BE framework adds extra support options and decision points (such "Use integrated scale?"), which makes the process more intricate but also more suited to the needs of the client.

Experience of the Customer:

The AS-IS model allows basic self-service, but it can be difficult for clients, especially when dealing with fresh product or technical concerns.

In order to improve the experience and decrease confusion and increase satisfaction, the TO-BE model provides accurate weighing and prompt support.

Requirements for Integration:

The device, checkout terminal, and backend systems interact simply under the AS-IS model, but more thorough integration is required in the TO-BE model. It must manage dynamic user interface changes, real-time sensor data, and quick support staff communication.

POTENTIAL APPLICATION INTEGRATION ISSUES WITH THE TO-BE MODEL

One of the main integration challenges is the cost of integrating a built-in weighing scale to the trolley. Adding cutting-edge electronic sensors while making sure it works flawlessly with today's digital platform could be expensive. Additionally, other technological advancements like real-time data syncing and improved user interfaces may be expensive. Being able to connect to outdated databases and hardware systems that are currently in use, which might not be entirely compatible with new technologies, makes these investments much more difficult. This combination of substantial investment and probable compatibility problems underlines the value of a careful connection plan that combines cost containment and technological innovation.

ADDRESSING B2B MODEL OPTIMIZATION

Woolworths' present B2B connectivity with its suppliers can be enhanced to promote better retail operations. By using API-led connectivity, Woolworths and its supply chain partners can establish real-time, bidirectional communication, guaranteeing that inventory levels and order statuses are constantly updated. Cloud-based middleware solutions enable smooth data transformation and integration between old systems and new digital technologies, eliminating manual intervention and increasing operational efficiency. These innovations will not only increase supply chain responsiveness, but will also indirectly contribute to an improved in-store experience by ensuring accurate and timely product availability information is maintained.

CONCLUSIONS:

In summary, the AS-IS model serves as a functioning basis for the Scan&Go Trolley system, whilst the TO-BE model adds essential enhancements—such as an integrated weighing system and an instant support feature—to improve customer experience and process efficiency. These upgrades, however, provide major integration issues, particularly in terms of hardware synchronisation, data sharing, UI complexity, and support procedures. Furthermore, optimising the company's B2B integration strategy with modern API-led connectivity and cloud-based middleware can boost operational efficiency and indirectly contribute to the better retail process. Woolworths' combined efforts position it to provide a more seamless, dependable, and customer-centric purchasing experience.

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