SE101 - SYSTEM ENGINEERING 1

QUEZON CITY UNIVERSITY

COLLEGE OF COMPUTER STUDIES

Project Title Proposal Form

Subject Adviser: Maria Aura Impang Section: SBCS-3A Group Name: GIT PUSHER

Proposed Project Title: Business Virtual Assistant (BVA)	
Project Leader: Mendoza, Julius Ceasar V.	
Members:	
Name (LN, FN, MI)	**Role/s**
1. Bolito, Jashley Denzel D.	Front-End Developer
2. Codinera, Rafael Emmanuel B.	Front-End and IU-UX Designer
3. Dagode, Marc Gerald A.	Full Stack Developer and SQA
4. Lopez, Jefferson C.	Database Administrator

Project Description:

In today's fast-paced digital economy, online sellers and small to medium-sized e-commerce businesses face increasing pressure to maintain efficiency, profitability, and competitiveness. Managing stocks, monitoring sales trends, and maintaining an active online presence are vital yet time-consuming tasks that often stretch limited manpower and resources. As businesses expand across multiple online platforms, the need for a unified and intelligent system becomes even more essential.

In most existing inventory systems, the process primarily revolves around basic functions such as recording stock-in and stock-out, tracking available quantities, and generating reports. While these systems assist in maintaining records, they usually require frequent manual updates whenever sales occur, items are replenished, or adjustments are made. Some offer low-stock alerts and summaries, but most stop at simple monitoring, leaving sellers to analyze data and make decisions manually.

However, challenges arise when sellers operate on several platforms like Shopee, Lazada, and TikTok Shop. Each of these systems functions independently, causing fragmented data, duplicate records, and inconsistencies in tracking. This lack of integration often results in overselling, canceled orders, and unreliable insights. Without a centralized system, owners struggle to view their overall business performance, forcing them to rely on platform-specific analytics that give only partial and disconnected information.

To address these issues, the Business Virtual Assistant (BVA) is developed as an intelligent digital platform tailored for online sellers. It integrates automation and advanced analytics to streamline inventory and marketing operations. Core features include predictive forecasting, automated marketing assistance, smart restock planning, expiry monitoring, and simplified sales and profit reporting. Through these capabilities, BVA empowers online sellers to make informed decisions, reduce operational errors, and promote sustainable business growth with greater efficiency.

Objectives:

General Objective:

The main **goal** of this study is to create a Business Virtual Assistant tailored for online sellers. The system aims to equip them with automated, data-driven tools that boost profitability, simplify fulfillment processes, and promote sustainable business growth.

Specific Objectives:

1. To develop **MarketMate (AI Advertisement)** that automatically generates contextual marketing campaigns through playbooks like Flash Sale, New Arrival, Bestseller Spotlight, and Bundle Up, and provides one-click publishing of ready-to-launch promos on social platforms.

2. To design a **Smart Restock Planner with Intelligent Forecasting** that creates a baseline sales calendar from historical data, adjusts predictions using real-world context (e.g., weather, holidays, payday cycles), and recommends restocking strategies aligned with sellers' budgets and goals.

3. To implement **SmartShelf with Analytics Dashboard** Integration that highlights at-risk inventory, pairs expiring products with calendar events to generate targeted promotions, and provides sellers with visual sales insights, predictive trends, and actionable recommendations for maximizing efficiency.

Scope:

1. **Retrieves and monitors stock-in and stock-out data per platform** (Shopee, Lazada, TikTok Shop) via API integration, keeping records separate but providing a unified summary of overall sales and inventory.

2. Uses **flexible predictive analytics with machine learning algorithms** to analyze sales patterns, customer behavior, and external factors, adapting to different product types to forecast demand and prevent overstocking or stockouts. It minimizes gut-feel decisions, such as assuming summer items will sell fast, while recognizing predictions are not guaranteed.

3. Accept a **user's available budget** and **suggest** the most profitable product mix to restock, considering sales history, profit margin, and expiration risks.

4. Assist sellers in generating, scheduling, and **publishing advertisements/promotions** across social media platforms, based on sales and inventory data.

5. **Monitors overall product status and sales performance** across all item types to maintain balanced inventory levels. It provides strategic recommendations such as discounts, bundles, or promos to improve sales turnover and reduce potential losses.

6. Provide summaries of sales and profits from different platforms (e.g. Tiktok Shop, Lazada, Tiktok) to **help sellers make quick decisions** without manually compiling data.

Limitations|Delimitations:

1. **The AI features** (forecasting, ads, restock planner) are generalized for merchandise sellers and **cannot be fully tailored** for niche industries with strict regulations (e.g., pharmaceuticals, hazardous goods).

2. **Users cannot directly edit or customize the AI-generated advertisements from the system itself.** The system produces ads based on inventory and sales data, and users can only schedule or publish them as generated.

3. **API integration** is limited to supported platforms (Shopee, Lazada, TikTok Shop) and may require adjustments if those platforms update or restrict API features.

4. Advertisement automation is limited to **organic social media posting** and does not directly integrate with paid advertising features of Shopee, Lazada, TikTok Shop, or Facebook Ads Manager.

5. The **system will not handle courier assignment, shipment tracking, or logistics route optimization**; it will only update inventory after sales are recorded through receipts.

6. While restock recommendations are provided, the system will **not automatically place purchase orders with suppliers unless the user decides to approve the suggestions**; it only generates a suggested shopping list.

7. **Forecast accuracy depends on a complete and accurate sales history; unexpected events** (e.g., competitor promos, supply issues) are not covered.

Note: This part is to be accomplished by the Subject Adviser.

Remarks:

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_____

- Approved
- Disapproved
- with Revision

Signature: _____

Date: _____