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IMPULSIVITY MODERATING BETWEEN USER ENGAGEMENT AND MICROTRANSACTION BEHAVIOR AMONG FILIPINO EMERGING ADULT GENSHIN IMPACT PLAYERS

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ABSTRACT

This study analyzed the moderating effect of impulsivity on the relationship between user engagement and microtransactions among Filipino emerging adult Genshin Impact players. The interaction between user engagement and impulsivity remains underexplored, particularly in the Filipino context. Using a quantitative design, data were gathered from 215 emerging adult players in the Greater Manila Area who made gacha-related purchases. Standardized scales measured user engagement (UES-SF), impulsive buying tendency (IBT), and in-game purchase intention (ICPIS). Moderation analysis showed that both user engagement ($b = 0.538, p < .001$) and impulsivity ($b = 0.308, p < .001$) predicted microtransactions, but their interaction was not significant ($b = -0.213, p = .129$). Simple slope analysis indicated that engagement predicted spending across all levels of impulsivity, although the positive effect was slightly attenuated at higher levels of impulsivity. These findings suggest that while both engagement and impulsivity independently influence microtransaction behavior, impulsivity does not significantly amplify engagement-driven spending.

Keywords: user engagement, impulsivity, microtransaction behavior, emerging adults, Genshin Impact

INTRODUCTION

Gacha games, which have originated in the distinctive Japanese coin-operated machines known as 'Gachapon' (capsule-toy vending machines), have evolved into a significant part of the gaming industry. The games entice players by offering random virtual items through microtransactions, thereby establishing a lottery-like experience. An example of this is Genshin Impact, a free-to-play action role-playing game developed by miHoYo (now known as HoYoverse), which was released in 2020. The "Wish" system in Genshin Impact, which encourages repeated attempts to obtain rare items, is frequently likened to gambling due to its striking similarities (Lakić, Bernik, & Čep, 2023; Nguyen, 2025; Petrovskaya et al., 2022; Park, 2020; Widjaja et al., 2024). The gaming industry targets these players through in-game purchases, microtransactions, and loot boxes, all of which employ randomized rewards that resemble gambling (Close et al., 2021). Particularly among digitally native consumers, understanding the behavioral factors influencing microtransaction engagement is crucial, given the rapid growth of gacha games.

The growth of gacha games raises public health and consumer protection concerns regarding financial harm. One of the main psychological elements influencing microtransaction behavior is user engagement. This refers to the extent to which players are engrossed in digital environments. Greater engagement is associated with more in-app purchases, as engaged players are more likely to view in-game spending as significant and a reasonable investment.

However, engagement alone does not explain why some players spend responsibly while others face financial distress. This suggests a moderating factor is at work in microtransaction behavior. Impulsivity is likely the one causing the difference in this decision. It is characterized by an individual's tendency to act on immediate urges without considering the consequence (Hamari & Keronen, 2017, as cited in Hamari et al., 2020).

This problem is especially pressing among emerging adults

(specifically Filipino gamers). This group is prone to impulsive and problematic digital behaviors due to their developmental stage and lifestyle (King et al., 2020). Emerging adults constitute a frequently studied demographic in the Philippines across digital contexts, including social media and general internet use (Cleofas et al., 2022; Luo et al., 2023; Fields, 2024). In the Filipino context, mobile gaming and digital connectivity are integral to the lives and interactions of youth, with high levels of internet engagement shaping both leisure and social behaviors (Labor & Sayuno, 2024).

Review of Related Literature

Understanding User Engagement in Gaming

User engagement refers to the degree to which players are cognitively, emotionally, and behaviorally engaged in digital environments. In this study, the operationalized definition of user engagement is the degree of psychological immersion and involvement of the participant in a gacha game. Self-Determination Theory suggests that engagement in digital games is often driven by individuals' psychological needs and emotions, motivating them to continue playing. To assess engagement levels, the User Engagement Scale (UES) is often used. This is used to evaluate individuals' cognitive, emotional, and behavioral investments in digital systems, as in in-game contexts (Lalmas et al., 2022). Furthermore, user engagement is clearly high among Filipino gamers, with over 43 million active players as of 2021. The Philippines ranks 18th globally in electronic sports (esports) revenue, with Filipino esports players collectively earning over \$20 million across more than 1,000 events. More gaming events and competitions are forthcoming, further cementing the role of digital gaming in entertainment and economic growth in the Philippines (Marcelo, 2024).

Microtransaction Behavior and its Psychological Underpinnings

Microtransaction behavior refers to the motivations, frequency, and monetary value of in-game purchases, particularly in gacha games,

which resemble gambling due to chance-based rewards and psychological reinforcement (Gibson, 2022). This study conceptualized microtransaction behavior as players' intention to purchase in-game content, grounded in the Theory of Planned Behavior, which identifies intention as the primary predictor of behavior, shaped by attitudes, subjective norms, and perceived control (Nonis et al., 2025). Focusing on intention highlights the cognitive and motivational processes preceding expenditures, measured here using the In-Game Content Purchase Intention Scale (ICPIS), capturing drivers such as self-liberation and self-efficacy (Chung & Lau, 2021).

Impulsivity as a Moderator of Engagement and Spending

Impulsivity is defined as a predisposition toward rapid, unplanned responses to stimuli, without adequate consideration of potential negative consequences (Barratt, 1994; Patton, Stanford, & Barratt, 1995, as cited in Lau et al., 2022). Individuals with high impulsivity sometimes find it challenging to focus, control their behavior, or pause to consider the long-term effects of their actions. In this research paper, the operationalized definition of impulsivity is based on the impulsive buying tendency. Drawing from the work of Beatty & Ferrell (1998) and Rook & Fisher (1995), as cited in Badgaiyan, Verma, & Dixit (2016), impulsive buying tendency is defined as the degree to which an individual is likely to make unintended, immediate, and unreflective purchases.

This specific focus on financial behaviors in gaming environments, where gameplay and in-game stimuli can trigger spontaneous decisions, differentiates it from a more general personality trait. According to the Reflective-Impulsive Model, the reflective system weighs long-term consequences, whereas the impulsive system drives immediate, affect-laden choices that often result in uncalculated microtransactions (Strack & Deutsch, 2004, as cited in Ong, 2022; Eysenck & Eysenck, 1977, as cited in Richard & King, 2022).

Genshin Impact's Wish Mechanics and the Filipino Context

Genshin Impact's "wish" mechanic operates on a variable-ratio reinforcement schedule, where each wish has a slight chance (0.3%) of yielding a five-star character. It includes a "soft pity" boost after 75 pulls and guarantees a five-star by 90 pulls on character banners. This design leverages the variable-ratio principle (known to produce high persistence in operant behaviors) by keeping the exact pull threshold unpredictable (Johansson et al., 2022). Impulsivity, particularly the facets of positive urgency and sensation seeking, moderates the relationship between wish pulls and spending severity. A quantitative survey found that higher urgency scores significantly predicted both the number of pulls and total Primogem expenditure, even after controlling for income (Smith & Lee, 2024). Emerging evidence links heavy gacha engagement to higher risks of gambling-like harms, particularly among youth with limited self-control (Han, 2025).

Research Gap

Research on microtransactions and user involvement has been extensive, but knowledge of the role of impulsivity as a moderator between these variables remains limited. Impulsivity correlates with problematic gaming and spending patterns (Murch & Clark, 2021), yet few studies examine how it interacts with high user engagement to trigger impulsive in-game purchases. This gap is particularly relevant in the Filipino gaming landscape, given the industry's rapid growth and culturally shaped consumption patterns.

Theoretical Framework

Reflective-Impulsive Model (RIM) is a dual-process theory providing a careful approach to comprehending human behavior (Strack & Deutsch, 2004, as cited in Ong, 2022). This model posits that two linked systems shape behavior: the slow, logical, deliberate, reflective system and the impulsive system, which responds quickly and emotionally, typically in pursuit of immediate gratification. The reflective system is more likely to be active when players are highly

engaged and focused on the game. By treating microtransactions as investments that enhance their overall experience, players can make strategic in-game purchases that align with their long-term gaming objectives. On the other hand, individuals who rely more on the impulsive system (System 1) are more prone to making quick, emotionally driven purchases. The Impulsive Buying Tendency (IBT) scale measures a consumer's impulsivity across two dimensions: cognitive and affective. High scorers on this scale are more prone to make regular, unplanned microtransactions depending on emotions rather than reason.

Conceptual Framework

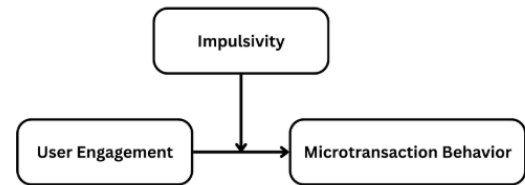


Figure 1. Conceptual Framework of the Study

Grounded in the Reflective-Impulsive Model (Strack & Deutsch, 2004, as cited in Ong, 2022), this study examined how reflective (deliberative) and impulsive (affective) processes shape digital consumption decisions. User engagement refers to players' immersion, emotional investment, and motivation during gameplay (Lalmas et al., 2022). Highly engaged players are more likely to perceive in-game purchases as valuable, increasing microtransaction spending.

Impulsivity was proposed as a moderator of this relationship, such that higher impulsivity strengthens the positive association between engagement and microtransaction behavior by increasing susceptibility to spontaneous purchases. Conversely, players with lower impulsivity were expected to exhibit more controlled spending even at high engagement levels.

Microtransaction behavior reflects the frequency and amount of in-game spending, particularly in gacha systems where randomness promotes repeated purchases (Hamari & Keronen, 2017, as cited in Hamari et al., 2020). Impulsivity, defined as a tendency to act without considering long-term consequences (Fenneman et al., 2022), increases responsiveness to in-game marketing and reduces delayed gratification, leading to more unplanned purchases, whereas low impulsivity is associated with more deliberate financial decisions.

Research Questions and Hypothesis

The study examined how user engagement relates to microtransaction behavior, specifically investigating whether impulsivity influences this relationship. (1) Does impulsivity moderate the relationship between user engagement and microtransaction behavior? Drawing from existing literature and theoretical frameworks, this study hypothesizes that impulsivity influences how strongly user engagement impacts microtransaction behavior. (1) The relationship between user engagement and microtransaction behavior would be stronger for those with higher levels of impulsivity.

METHODS

Research Design

This study investigated the relationship between user engagement and microtransactions among emerging adult players of Genshin Impact using a quantitative, cross-sectional methodology. For this study, this type of research was appropriate since it allowed the relationship

between engagement and expenditure to be clearly measured.

Participants and Study Sites

The study focused on Genshin Impact players aged 18-29, a period sometimes referred to as emerging adulthood (Arnett, 2023). This period is marked by exploration and transition: no longer adolescents, but not yet fully settled into the responsibilities of adulthood. The sample size for this study was 215 participants, consistent with prior similar studies. For instance, a study by Zein et al. (2023) on the determinants of game product repurchasing behavior in a virtual community collected data from 215 respondents. The sample's age distribution for this study included 40 participants at 18 years old (20%), 29 at 21 years old (14.5%), and 27 at 22 years old (13.5%), with the remainder aged 19-29.

In this study, the sample was predominantly composed of emerging adults, with the largest age groups at 18 years (20%), 21 years (14.5%), and 22 years (13.5%). Most respondents reported residing in Metro Manila (63%), followed by Cavite (16.5%), Laguna (9%), Bulacan (7.5%), and Rizal (4%).

Regarding gaming activity, 17.5% reported playing Genshin Impact for 3 to 4 hours per week, 14% for 2 to 3 hours, and 13% for more than 10 hours per week. Regarding monthly income, 64% earned below ₱10,000, while 24% earned between ₱10,000 and ₱29,999.

Table 1. Demographics Profile of the Participants (N=30)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Age	18 years old	40	20
	19 years old	24	12
	20 years old	22	11
	21 years old	29	14.5
	22 years old	27	13.5
	23 years old	13	6.5
	24 years old	7	3.5
	25 years old	6	3
	26 years old	9	4.5
	27 years old	4	2
	28 years old	7	3.5
29 years old	12	6	
Hours Playing Genshin Impact per Week	Less than an hour	19	9.5
	1 to 2 hours	25	12.5
	2 to 3 hours	28	14
	3 to 4 hours	35	17.5
	4 to 5 hours	24	12
	5 to 6 hours	12	6
	6 to 7 hours	15	7.5
	7 to 8 hours	9	4.5
	8 to 9 hours	2	1
	9 to 10 hours	5	2.5
More than 10 hours	26	13	
Monthly Income	Less than ₱10,000	128	64
	₱10,000 to ₱29,999	48	24
	₱30,000 to ₱49,999	11	5.5
	₱50,000 and above	13	6.5
Residence	Metro Manila	126	63
	Bulacan	15	7.5
	Cavite	33	16.5
	Laguna	18	9
	Rizal	8	4

These individuals also have played Genshin Impact for at least six consecutive months, completed a minimum of two microtransactions to purchase Genesis Crystals (converted to Primogems) for “pulls” or “wishes” on the character or weapon banners (limited or standard banner), receive and use disposable income (salary rather than allowance), and possessed an understanding of randomized in-game purchasing mechanics in the game. To ensure that the sample only focused exclusively on the gacha system of Genshin Impact, anyone whose in-game purchases were confined to non-gacha microtransaction models was excluded. In addition, individuals who

did not fall within the 18–29 age range, who had never made a randomized pull in the game, or who did not live in the Greater Manila Area were excluded.

Purposive sampling was utilized to recruit participants. Purposive sampling, a non-probability sampling technique, involves selecting participants based on specific characteristics or criteria relevant to the study question. The recruitment site was hosted on online platforms and communities where Genshin Impact players gather, and the survey was distributed in pertinent Facebook and Reddit groups.

Research Instruments

Data were collected using an online survey administered via Google Forms to ensure accessibility and convenience. The questionnaire comprised five sections: (1) Informed Consent Form, (2) Demographic Profile (age, residence within the Greater Manila Area, duration and weekly hours of Genshin Impact play, and disposable income range), (3) User Engagement Scale, (4) Impulsive Buying Tendency (IBT) Scale, and (5) In-Game Content Purchase Intention Scale. The informed consent outlined the study procedures, participants' rights, and voluntary participation, including the option to withdraw at any time.

User Engagement Scale

User engagement was operationalized using the User Engagement Scale–Short Form (UES-SF), which measures engagement across four dimensions: Focused Attention, Perceived Usability, Aesthetic Appeal, and Reward. The UES-SF has been applied across diverse digital contexts and age groups, supporting its cross-cultural relevance (Amriza et al., 2023; Wisessathorn et al., 2022). Responses were rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with overall scores computed by averaging the twelve items. The original Cronbach's alpha for the UES-SF is .86 (O'Brien, 2025). In the present study, reliability was .635, which is considered acceptable for exploratory behavioral research using brief, multidimensional scales (Henseler et al., 2020).

Impulsive Buying Tendency (IBT) Scale

Impulsivity was measured using the 11-item Impulsive Buying Tendency (IBT) scale developed by Badgaiyan et al. (2016), assessing cognitive and affective components of impulsive purchasing. Items were rated on a Likert scale and summed to obtain total and subscale scores. The IBT demonstrated strong internal consistency in this study ($\alpha = .846$), comparable to reliability reported in prior validation studies. The sample mean impulsivity score was 2.53 (SD = 0.75).

In-Game Content Purchase Intention Scale

Microtransaction behavior was operationalized using the In-Game Content Purchase Intention Scale (ICPIS), which assesses purchase intention across Self-Liberation and Self-Efficacy dimensions. Items were rated on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree), with higher scores indicating stronger purchase intentions. The ICPIS demonstrated acceptable internal consistency in the present study ($\alpha = .742$), consistent with prior validation findings (Chung & Lau, 2021). The overall mean purchase intention score was 4.64 (SD = 0.69).

Data Gathering Process

The data collection process started with participant recruitment through purposive sampling. This involved actively seeking out and engaging with online communities, forums, and groups on social media platforms dedicated to gacha games.

The researchers posted the invitation to participate in the study in these online spaces, ensuring that it clearly stated the study's purpose,

inclusion criteria, estimated time to participate, and assurances of anonymity and data privacy.

Individuals who clicked the link in the post were directed to a Google Forms survey that included sections to collect demographic information, gacha gaming habits, and microtransaction experiences. The survey was followed by an implicit screening through initial survey questions to ensure that participants met the basic inclusion criteria. Participants who qualified then completed the standardized questionnaires. Responding to the survey took approximately 10-15 minutes. Responses were automatically collected and stored in Google Forms. Once data collection was complete, the data were exported and cleaned before being analyzed in Jamovi to test the hypotheses, including a moderation analysis.

The statistical analysis conducted on the sample data was used to estimate the population correlation between the variables of interest. Ethical considerations included obtaining participants' digital informed consent before participation and providing them with study details. The participants' responses were voluntary; they could withdraw at any time without consequences. Confidentiality was maintained to ensure compliance with the Data Privacy Act of 2012. Sensitive personal information, such as participants' age, as defined under the Act, was securely managed, stored separately, and used only for research purposes, thereby ensuring that no one could be identified. A debriefing plan was given at the end of the survey. It explained the purpose of the study, thanked participants for their time, and provided support resources for any psychological or emotional discomfort experienced during or after the survey.

Ethical Considerations

This study adhered to established ethical standards to protect participants' rights and welfare. Informed consent was obtained prior to survey participation, with participants fully informed of the study's purpose, procedures, risks, and benefits. Participation was voluntary, and respondents could withdraw at any time without penalty. Confidentiality was ensured through anonymous data collection, secure storage, and presentation of findings in aggregated form. No sensitive personal information, as defined by the Data Privacy Act of 2012, was collected aside from age; other personal data were handled with strict confidentiality. All data were encrypted and accessible only to the student researchers and supervising faculty.

Data Analysis

A moderation analysis was conducted to examine whether impulsivity influenced the relationship between user engagement and microtransaction behavior. This method was selected to determine whether the strength or direction of the engagement–spending relationship varied as a function of impulsivity (Hair et al., 2021).

RESULTS

Table 2. Descriptives of the Key Variables

	Mean	SD	Variance	Minimum	Maximum
User Engagement	4.02	0.404	0.164	3.00	5.00
Impulsivity	27.80	8.272	68.420	13	49
Microtransaction Behavior	46.36	6.876	47.27	23	60

Table 2 presents the descriptive statistics of the key variables. User engagement showed a high mean score ($M = 4.02$, $SD = 0.40$), indicating generally strong engagement among participants. Impulsivity scores averaged 27.80 ($SD = 8.27$), reflecting moderate impulsivity. Microtransaction behavior had a mean of 46.36 ($SD = 6.88$), suggesting moderate to high in-game spending behavior.

Table 3. Shapiro–Wilk Test of Normality for Key Study Variables

	Shapiro–Wilk	
	W	<i>p</i> -value
User Engagement	0.983	0.010
Impulsivity	0.971	<.001
Microtransaction Behavior	0.979	0.003

Shapiro–Wilk tests indicated significant deviations from normality for user engagement ($W = .983$, $p = .010$), impulsivity ($W = .971$, $p < .001$), and microtransaction behavior ($W = .979$, $p = .003$).

Table 4. Moderation Analysis of Impulsivity on User Engagement & Microtransaction Behavior

	Estimate	SE	Z	<i>p</i> -value
User Engagement	5.384	1.0242	5.26	<.001
Impulsivity	0.280	0.0468	5.99	<.001
User Engagement * Impulsivity	-0.193	0.1121	-1.72	0.085

Moderation analysis revealed that user engagement was a significant positive predictor of microtransaction behavior ($\beta = 5.38$, $p < .001$), as was impulsivity ($\beta = 0.28$, $p < .001$). However, the interaction between user engagement and impulsivity was not statistically significant ($\beta = -0.19$, $p = .085$), indicating that impulsivity did not significantly moderate the relationship between engagement and microtransaction behavior.

Table 5. Simple Slope Analysis for the Moderating Role of Impulsivity

	Estimate	SE	Z	<i>p</i> -value
Average	5.38	1.03	5.21	<.001
Low (-1 SD)	6.98	1.60	4.37	<.001
High (+1 SD)	3.79	1.14	3.31	<.001

Simple slope analyses showed that user engagement significantly predicted microtransaction behavior at low, average, and high levels of impulsivity (all $ps < .001$). The strongest effect was observed at low impulsivity, with the magnitude of the relationship decreasing as impulsivity increased. These conditional effects help explain the non-significant interaction, suggesting variation in effect strength without a statistically reliable moderating influence.

DISCUSSION

Main Effects and Independent Pathways

The main goal of this study was to examine how user engagement and impulsivity predict microtransaction behavior. The results show that both are significant, positive, and independent predictors of microtransactions. Specifically, user engagement and impulsivity both contribute to spending intentions but through additive rather than interactive mechanisms. These findings align with the Reflective–Impulsive Model (RIM), which posits that behavior is driven by two distinct systems: a reflective system and an impulsive system. In this study, user engagement appears to map onto the reflective pathway, in which spending is a calculated outcome of game investment, immersion, and progression goals (O'Brien, 2025; Lalmas et al., 2022). This reflective system operates through propositional reasoning, where the player evaluates the utility of a purchase based on their long-term involvement. Impulsivity maps onto the impulsive pathway, in which spending is driven by trait-level susceptibility to immediate gratification and reward seeking (Nguyen, 2025; Rita et al., 2024). This system is governed by associative links and affect, triggering behavior through immediate sensory cues rather than deliberation. The significance of both predictors, in the absence of an interaction, suggests that these two psychological routes operate in parallel: a player's internal trait (impulsivity) increases their baseline propensity to spend, while the situational state (engagement) provides

a separate, cumulative urge to buy. This pattern is consistent with recent findings showing that involvement in mobile game play and related emotional and psychological engagement correlate with impulsive purchasing tendencies, indicating distinct but additive behavioral drivers (Chung et al., 2024).

Explaining the Non-Significant Moderation

Contrary to the hypothesis, the interaction between user engagement and impulsivity was not significant. This means impulsivity did not moderate. In the context of the Reflective–Impulsive Model (RIM), this result suggests that the impulsive system’s automatic triggers operate independently from the reflective system’s motivations. These two psychological pathways function as separate entry points to the behavioral schema, which indicates that a player's immediate urges and their logical investment goals provide distinct, parallel drives toward microtransaction behavior. Several demographic and contextual factors likely contributed to this.

First, the participants' demographic profile may explain the findings. The sample mainly consisted of emerging adults (18–22), a group with developing financial literacy and limited discretionary income (Kaur & Singh, 2025). While highly impulsive and engaged players may have the psychological urge to spend excessively (which would theoretically create a significant interaction), their actual behavior is constrained by financial reality. This "ceiling effect" imposed by budget constraints may have prevented the exponential spending spikes expected under a moderation model, thereby masking the interaction. Second, modern Gacha games are designed to have independent rather than interactive effects. These systems target both pathways, but separately. Games have "pity systems" and guaranteed progression to monetize reflective, engaged players while simultaneously using sensory-rich, casino-like aesthetics to monetize impulsive players (Liu, 2025; Zhang, 2023). Because the game mechanics can trigger spending through either route independently, the presence of one factor (e.g., high engagement) does not necessarily require the other (e.g., high impulsivity) to generate revenue, hence the additive model.

Analysis of the Simple Slope Analysis

User engagement was a significant predictor of microtransactions at all levels of impulsivity, but the strength of the relationship varied. Interestingly, the relationship was strongest among participants with low impulsivity and weakest among those with high impulsivity. This pattern indicates that players with low impulsivity rely predominantly on the reflective system, which requires a “reason” to spend. Their spending is deliberate, frugal, and contingent on their level of engagement; they spend only when fully immersed. Players with high impulsivity have a shallower slope because their spending is more erratic. They spend more, but their purchasing behavior is driven by the impulsive system's rapid response to stimuli, which bypasses the reflective system's need for justification. This randomness introduces "noise" into the relationship, making their spending less predictable based on engagement alone compared to their less impulsive counterparts.

CONCLUSION

This study aimed to examine the relationship between user engagement and impulsivity in predicting microtransactions among emerging adult Genshin Impact players. The results show that user engagement and impulsivity are separate, independent predictors of spending intentions rather than interacting. The hypothesized moderation was also not supported. Instead, the data support an

additive model consistent with the Reflective–Impulsive Model (RIM), in which spending behavior is driven by two distinct psychological pathways: a reflective route based on game immersion (engagement) and an automatic route based on trait-level urges (impulsivity).

The lack of interaction and the insights from the simple slope analysis suggest that these two pathways operate differently as a function of the individual’s self-regulatory capacity. For players with low impulsivity, spending is highly dependent on their engagement; they need the “reason” of deep game involvement to justify a purchase, representing a highly active reflective pathway. For players with high impulsivity, the link between engagement and spending is weaker. They have a higher baseline spend due to internal urges, so their purchasing behavior is less dependent on how “engaged” they are with specific game mechanics, as the impulsive pathway dominates the behavioral output.

Contextual factors about the sample and game design also explain these findings. The presence of emerging adults suggests that financial constraints may impose a “ceiling effect” on spending, so high-impulsivity players cannot exhibit the exponential spending spikes that a moderation model would predict. Modern Gacha game mechanics appear effective at targeting both pathways simultaneously yet separately, using progress systems to capture reflective, engaged players and sensory triggers to capture impulsive players. In the end, this study shows that impulsivity increases overall spending but does not change the mechanism by which engagement translates to spending.

Limitations and Recommendations

This study has several limitations. The sample consisted of 215 Filipino emerging adults aged 18–22, predominantly from lower- to middle-income backgrounds, which limits the generalizability of the findings to populations with higher disposable income. Spending behavior in this sample may reflect financial constraints rather than typical consumption patterns. Future research should compare groups across income levels to clarify the role of socioeconomic status in engagement–spending relationships.

The cross-sectional design also restricts causal inference, making it unclear whether impulsivity precedes spending or if sustained engagement drives expenditure. Longitudinal studies incorporating playtime logs and purchase histories are recommended to capture temporal patterns.

The non-significant moderating effect may be attributable to the use of a broad impulsivity measure. Cognitive and affective impulsivity may function differently in gaming contexts and should be examined separately in future studies. Additionally, reliance on self-reported data introduces recall and social desirability bias; integrating objective behavioral records would strengthen validity.

Findings may also be game-specific, as Genshin Impact’s “pity system” encourages strategic planning. Comparative studies across gacha and non-gacha games are necessary to determine the generalizability of the results. Future models should further consider financial literacy, fear of missing out (FoMO), and emotion regulation as covariates.

Practically, the results highlight engagement as a robust predictor of spending, underscoring the need for responsible monetization practices. Developers and policymakers should prioritize transparency measures such as clear probability disclosures, spending dashboards,

optional caps, and distinctions between randomized and guaranteed purchases. Although impulsivity remains associated with higher spending, interventions should address it as a baseline vulnerability rather than a primary driver of engagement-related purchases.

The findings also hold implications for mental health and financial education initiatives. Professionals addressing problematic gaming or spending behaviors should consider both impulsivity and high engagement as risk factors. Interventions combining financial literacy and emotion-regulation strategies may be particularly effective. Collectively, this study supports the development of ethically responsible game design and policy frameworks that balance monetization with player well-being.

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A DYNAMIC WEB-BASED INFORMATION MANAGEMENT SYSTEM FOR BARANGAY OLYMPIA, MAKATI CITY

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ABSTRACT

This capstone project aims to analyze, design, and develop a dynamic web-based information management system for Barangay Olympia in Makati City. The system aims to provide barangay officials and health center staff with an efficient tool for managing administrative tasks and processes, addressing the inefficiencies of the current manual record-keeping system. These inefficiencies include poor organization and limited access, leading to delays and potential errors in handling critical information. Developed using PHP with the Laravel framework and MySQL as the database, the project followed the Agile methodology, incorporating features such as role-based access, authentication, and data encryption to ensure security. System functionality, portability, and security were evaluated using the ISO 25010 standard, with testing conducted through a survey of 50 respondents, including barangay officials, IT professionals, and residents. The system received an average rating of 4.82, interpreted as "Excellent," demonstrating its effectiveness in enhancing productivity and operational efficiency for both barangay and health center activities. This project offers a robust foundation for future improvements, such as integrating additional features or expanding capabilities to better serve the community.

Keywords: *Barangay Olympia, Information Management System, Laravel, Agile methodology, record management.*

INTRODUCTION

Addressing societal concerns is significant for Barangays in attaining good governance. It is their responsibility to be able to lead their constituents and make sure their designated area thrives. One of the many aspects to focus on to achieve this is making important official documents efficiently acquired by the residents, especially when needed. According to the study by Gallera, J. M., & Salvador, A. S. (2023), local-level governance such as the local barangays, could be systematized and beneficial with a digitized information system that enhances the management and access to information.

The Barangay Olympia, District 1 is located at 8674 Fortuna Street, Makati City. Over the past years, Barangay Olympia has been fulfilling its role as the primary government unit, ensuring the residents' welfare and development. It also has a health center catering to the medicinal and health needs of its constituents. With a land area spanning 45.65 hectares, the barangay accommodates a population of 22, 605 individuals. The Barangay Secretariat handles all the administrative work regarding the official records of Barangay Olympia. Her job is to process paperwork, keep records, and other organizational tasks.

As stated by Haddad (2021), the main disadvantage of manual data entry is the high potential for human error due to inaccuracies of data transfer from one system to another. The Barangay Secretary faces an excessive burden in documenting data and retrieving records when constituents are requesting files that they need from the Barangay. Officials are having a hard time looking through each ledger to be able to retrieve and process these records. According to the Secretary, they handle an average of over 100 barangay document requests every day. The health center also accommodates multiple people's records in a day.

Gumabay and Corpuz (2021) conducted a study that discussed the purpose of removing manual processes especially as well in the medical field. This was created to lessen the paperwork, securely record patients' data and medical prescriptions, and provide quick

access to reports and inventory. Because these are manual processes, they must be done accurately and properly. When processing such data then the procedure slows down, and it not only affects the staff but also the constituents. According to the Secretary of the Barangay, Vera Marie Ferrer, and the Barangay Chairman, Bobby Yulo, they use Excel Sheets, however they could not utilize all its features. They also stated that they use Microsoft Word in creating certificates, bringing more heavy work when there are no templates and requiring the staff to print a certificate from scratch. One significant effect is human errors due to the limitations and vulnerabilities associated with manual data entry of the barangay. This method not only consumes a significant amount of time but also requires effort and careful attention to detail.

In addressing the need for efficient records management in Barangay Olympia, the implementation of a Dynamic Web-based Information Management System stands out as a solution.

Objectives of the Study

This study aimed to design and develop a Dynamic Web-based Barangay Information Management System with an integrated inventory management function for the health center to simplify operations and improve services for Barangay Olympia, Makati City. The system digitized residents and household records automated the issuance of essential documents and provided a platform for residents to make online personal document requests. It included an admin dashboard and announcement board for officials, ensured data privacy through role-based access levels, and offered a dynamic, customizable website for interactive content management. The system's effectiveness was evaluated based on the ISO 25010 standards to ensure quality and usability.

Significance of the Study

This study benefits Barangay Olympia by introducing a system designed to automate record management and modernize administrative

tasks. Additionally, the system extends its functionality to the Barangay's Health Center, with a simple inventory system to help manage and track their resources. By implementing this system, barangay officials and health center staff can organize official records more efficiently, ensuring that data is secure, easily accessible, and well-maintained. The automation of routine processes not only enhances operational efficiency but also allows officials and health center staff to focus on more strategic and community-centered initiatives.

Furthermore, this system minimizes the likelihood of errors associated with manual record-keeping, encouraging greater accuracy and reliability in administrative operations. It helps barangay and health center officials by reducing workload, minimizing errors, and speeding up processes. Residents benefit from improved services, faster transactions, and more efficient governance. Researchers gain awareness for further study of information systems, while future researchers can use the study as a foundation for related topics. Lastly, Colegio de San Juan de Letran benefits by showcasing academic excellence through the innovative ideas presented in this study.

Review of Related Literature

The Importance and Challenges of Information Management Systems

Information Management Systems (IMS) are essential for organizational success in both private and public sectors. As Indeed (2023) explains, IMS supports effective decision-making and growth by collecting, storing, organizing, and distributing data. Modern IMS often utilizes secure cloud storage, ensuring efficient deployment of information to stakeholders, improving operations, and enabling businesses to adapt swiftly. These systems play a vital role in reorganizing processes, fostering productivity, and supporting strategic initiatives.

However, challenges such as handling large data volumes, lack of coordination, and unclear strategic directions hinder IMS effectiveness (Robertson, 2024). Organizations can overcome these obstacles by prioritizing business needs, delivering tangible outcomes, and adopting solutions incrementally. Strong leadership, risk management, and employee training are crucial for successful IMS implementation. As Edology (n.d.) discussed, well-managed IMS empowers businesses to make informed decisions, improve customer service, and respond quickly to market changes, drive growth and long-term success.

Learning the Role of Barangay Health Center in the Philippines

A barangay health center in the Philippines is a local healthcare facility in the barangay, providing important health services to its community. These centers are run by Barangay Health workers or officials who focus on disease prevention and health promotion. Barangay health workers also play an important role in supporting a specific group of households. Improving the quality of care and making good use of resources, such as using new technologies and systems, is important to ensure these barangay centers continue meeting the healthcare needs of their constituents efficiently (What Is Barangay Health Station/Center, n.d.).

The Role of Technology in Local Governments

Technology plays an important role in improving local government units' operations by increasing efficiency, transparency, and public engagement. Project Information Management Systems (PIMS) help manage project-related data, automate tasks, and provide real-time updates that enhance decision-making and accountability. BuxByte, Inc. (2023) emphasizes how PIMS improves resource allocation, tracks project progress, and builds public confidence through insightful analytics and transparency. Similarly, Information and Communications Technology (ICT) enhances service quality and

administrative processes by automating tasks like property assessments and collections, as noted by De Castro, and De Castro, (2022).

Digital technology adoption in local government has numerous benefits, including cost savings, better decision-making, and improved delivery service. David et al. (2023) emphasize the importance of developing strategies to maximize these advantages while addressing challenges like a lack of IT professionals, as Hinkley (2020) wrote. Dharmaraj (2020) adds that post-pandemic digitization is critical for boosting local government revenues and adapting to the new economy. Despite slow modernization compared to the private sector, these technologies allow governments to handle larger workloads, reduce paperwork, and enhance services for citizens.

Synthesis of Related Literature

The Information Management System, also known as IMS, is an important part of any organization, company, or business to improve their services or their overall system for their clients. IMS consists of different systems and processes, including Document Management, Records Management, and Web Content Management, understanding this is crucial for effective management. Information Management Systems have different benefits. IMS enhanced the productivity of the employees. It allows the organization to make better decisions also to improve customer satisfaction. It can significantly enhance organizational efficiency and customer satisfaction. In terms of local government, IMS plays an important role in managing project data, IMS also facilitates better decision-making, increasing transparency, and enhancing public engagement. Adoption of technology by Local government units is essential for improving their services for their constituents. LGUs must adopt several strategic approaches, upgrade their technological infrastructure, and enhance the digital literacy of their employees to fully use the advantages that IMS brings.

Review of Related Local Studies

Barangay Local Government Units System with Office Automation Features

According to dela Cerna (2023), the Barangay Automation System highlights the importance of Barangay Local Government Units services in Surigao City, whereas the study is expected to empower digital transformation. Major features include requesting Barangay Documents, filing of complaints, and providing accurate data and reports. The application of the Agile Model simplifies the implementation due to its programming-centric procedures that require minimal conventions. This has promoted time efficiency and maintained the comprehensive use of documentation that was strictly required for the project.

Barangay Information System for Registration of Inhabitants with Integrated Aggregated Data Profiling

The Barangay Information System (BIS) is an important tool for improving local governance through the registration and profiling of barangay inhabitants. As noted by Manun-og (2023), the Registration of Barangay Inhabitants (RBI) plays a major role in effective planning, providing a basis for initiatives by using accurate demographic data. This system not only ensures peace, order, and security but also digitalizes local records management, reducing face-to-face interactions and facilitating quicker access to services.

As stated by Labanan and Abad (2020), emphasized the significance of e-government systems with integrated aggregated data profiling, as demonstrated in Zone 43. This system organizes records and provides

statistical insights on labor, income, housing, water sanitation, and population demographics. Using a combination of Top-down and Bottom-Up strategies, the system accommodates both the strategic goals of higher authorities and the specific needs of local users. The Agile methodology ensures iterative development with regular feedback from Barangay Officials, improving the system after each module's completion.

Web-Based Inventory Management System for Health Offices

The Expanded Programme on Immunization (EPI) by the World Health Organization wanted to deliver vaccines to children on a regular schedule as a means to prevent diseases. Determining vaccine demand is important to ensure vaccines are available when needed. In Panabo City, Davao del Norte, the City Health Office has problems in managing vaccine inventory, as the current manual process for recording vaccine stocks and dispensing them is time-consuming and prone to errors. To be able to solve this issue, a web-based inventory management system was developed so that vaccine transactions may improve, helping to make them more efficient (Rebortera, 2020).

Web-Based Barangay System with Document Requesting and Tracking Modules

In the research conducted by Taruc, et. al. (2023), the system is focused on a web-based system that features documents requesting for the Barangays in Cabanatuan City, Nueva Ecija, Philippines. Whereas it permits users to file complaints and manage, and track documents while following COVID-19 protocols. Major functions are requesting services of the documents, such as Barangay indigency, clearances, and business permits. The study recommendations of the researchers include the maintenance and enhancement of the system in the long run, using a user-centric design approach, and participation with related organizations of IT experts.

E-barangay Records Management System with Service Management, Statistics Reporting, and Census Graphical Analysis

According to Carpio (2020), the E-Barangay system addresses the challenges of limited resources by leveraging existing Barangay assets to record demographic profiles, handle document requests, and manage incident reports. It also features a reporting module that generates master lists and statistics, aiding in planning and implementing development programs. Carpio recommends translating the system into local languages and fostering interconnectivity among Barangays to boost efficiency and productivity.

According to the study by Villones (2021), it highlights the effectiveness of emerging technologies in reducing errors and data redundancy in Barangay Zone 4-A, Northern Negros. The system's features include data management, summary reporting, and census graphical analysis, which improves data visualization and community planning. Villones suggests maintaining the system with policies aligned to Barangay workflows, ensuring security and scalability, and encouraging its adoption by other Barangays to enhance governance further.

Barangay Management System featuring Centralized Data and Dynamic Announcement Module with Health Center Module

As stated by Senaris (2023), the Barangay is the principal branch of society, providing basic public services to its constituents. However, many Barangays face challenges in communication and accessing updated information. Thus, the proponents implemented a Barangay Management System as an extension service at the CvSU-Tanza Campus in Cavite, featuring an admin dashboard for report logging, form generation, and incident records management.

In conformity with Lim (2022), the study is motivated by the ongoing pandemic in the Philippines. The system responds to the optimization of public governance and health services at Barangay 16, Bacolod City, Negros Occidental. Key features include document management, incident complaint filing, consultation scheduling, and health service management, along with an inventory of documents and health supplies. The Barangay Healthcare System, as indicated by Go, et. al. (2021), emphasizes the long-term benefits of a Barangay Healthcare System, proposing 'VHISION' to enhance IT and Health Information Systems at Barangka Drive, Mandaluyong City. The features include automating electronic health records (EHRs), recording budgets and medical supplies, and computerizing health inventory and related developmental projects.

Review of Related Foreign Studies

Major Errors that can affect information security.

According to the study by Kobis (2023), human errors could be caused by a lot of factors. As written in the research study, one of the factors of these errors is the lack of proper knowledge in information security and protection. Another factor is being affected by the nature of the work, causing employees to be rushed and become fatigued. Having a lot of trust in third-party organizations affects human behaviors as well and it will give huge opportunities for criminal-minded individuals to construct social engineering. Employees will be prone to accidentally spilling sensitive and confidential information outside the organization or company.

Digital Transformation, ICT Adoption, and E-Governance for Quality Public Services

According to Bousdekis and Kardaras (2020), digital transformation involves collaboration with stakeholders, the creation of new service frameworks, and stronger inter-organizational relationships. However, the adoption of digital technologies in local government remains limited, with significant challenges in transitioning to advanced systems due to low levels of integration and limited research on the subject.

Ziembra (2020) highlights key factors influencing ICT adoption and digital transformation, including ICT investment, information culture, management practices, and quality. Montazemi and Pittaway (2020) emphasize the need for strategic IT planning and knowledge transfer to improve progress, reduce risks, and fully capitalize on the benefits of digitalization.

Yan and Huping (2020) address the difficulty of sustaining citizen engagement in e-government systems, proposing innovative principles to ensure continuous use. Local governments can leverage evolving technologies to "smartify" public services, creating real-time management systems, blockchain-secured records, and automated dispute resolution systems, as noted by Engin and Treleven (2019). These technologies, including big data, AI, and IoT, have the potential to transform government operations, improve efficiency, and enhance the quality of services delivered to communities.

Digitization of Management processes to address challenges and opportunities.

According to the study of Agostini, Galati, & Gastaldi (2020), input processing is becoming more complicated and interconnected, and most of the innovation processes are made in inter-organizational platforms. The innovation process has shrunk into expecting and improving stages where customers' feedback is assembled immediately. In digitization of processes, systems are more compressed and fast-paced. Aiming for more convenience for the

constituents as well as effectiveness and efficiency.

The development of service quality, accountability, and transparency of local government.

Local Governments in Surabaya, Indonesia are transitioning into e-government services. There is a lack of research studies about IT development in governance and public service. The study conducted by Sofyani, Riyadh, & Fahlevi (2020), discussed the government employees' perspective on the adoption of ICT for the service quality of public services. IT development is a tool and a strategy to enhance the performance and accountability of public servants as well as the government's projects.

Synthesis of Related Studies

Governments are an essential component to improve the quality of life for people, and so it is essential to adopt an effective digital transformation that will help contribute to the improvement of quality service. Local governments must find ways to innovate and keep up with the ever-changing technology. It is then they will be able to "smartify" or improve the public services' impact. Ideally, to attain this growth they must acknowledge the potential issues and errors that they had, are, and will be encountered in adopting new digital technologies. Hence, it is proper to know not just about information management but also about security, protection, and many more. Good practice is a must in these kinds of systems and policies.

Conceptual Framework

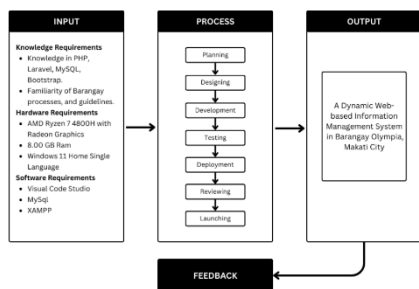


Figure 1. IPO Model

To successfully develop the Barangay Information Management System, the proponents require a strong foundation in key areas such as MySQL, Bootstrap, Laravel, and PHP. Additionally, an understanding of barangay policies and procedures is crucial to align the system with the community's needs. The project's hardware requirements include an AMD Ryzen 7 4800H processor with Radeon Graphics and 8GB of RAM to ensure optimal performance during development, along with Windows 11 for compatibility. On the software side, essential tools include MySQL for database management, XAMPP for local server setup, and Visual Studio Code as a useful text editor for coding tasks.

The development process follows the Agile Method, starting with thorough planning to define the study's background, objectives, and scope. System analysis identifies the system's requirements, constraints, and solutions, while the design phase creates a detailed blueprint of the system's architecture. The development phase translates these designs into code, followed by rigorous testing to meet quality standards. After iterative improvements, the system is web-hosted, making it accessible to end-users online. Continuous comments and reviews ensure transparency and interaction through feedback. Finally, the system is launched, concluding the completion of the project and delivering a dynamic, web-based information management system for Barangay Olympia, Makati City.

METHODOLOGY

Project Design

In building the Barangay Information Management system for Barangay Olympia, the proponents embraced the Agile methodology for project design. This decision was made due to its inherent flexibility and iterative nature, particularly suitable for the environment of barangay management.

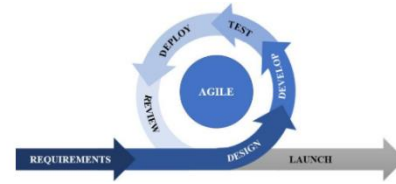


Figure 2. Agile Methodology

The initial phase of the project revolved around gathering requirements by conducting interviews with the Barangay Secretary and Health Center Admins. The proponents meticulously assessed the limitations of the existing system, such as inefficient record-keeping and lack of centralized information, while diligently compiling all necessary information provided by the Barangay. Furthermore, the proponents outlined the scope of the system, which includes features like resident profiles, document management, and communication tools, and established a development timeline to ensure timely delivery.

Progressing to the Design phase, the proponents meticulously planned the system's flow and crafted screen designs accordingly. Special emphasis was placed on creating a user-friendly interface to ensure a seamless experience for barangay staff and residents alike. This phase also involves designing the database structure to efficiently store and retrieve information related to residents, events, and administrative tasks. The most extensive phase, Development, saw the proponents translating their plans into functional code. Alongside this, the proponents integrated various security measures to fortify the system against potential threats, ensuring data privacy and integrity. Functions like user authentication, access control, and data encryption were implemented to safeguard sensitive information.

Subsequently, the Testing phase was initiated to meticulously examine the system for any bugs or errors, ensuring its reliability and efficacy. This phase involved careful testing procedures, including unit testing, integration testing, and user acceptance testing, to identify and resolve any issues before deployment. The Deployment phase involved preparing the system for launch to its intended users. Compatibility across different platforms, including desktop and mobile devices, was meticulously ensured to reach a wide audience. The system was deployed on secure servers with regular backups to ensure data availability and resilience against potential downtime.

The subsequent Review phase entailed a thorough evaluation of the system, pinpointing areas ripe for improvement based on user feedback and performance metrics. This feedback was instrumental in refining the system further, addressing usability issues, and optimizing performance. Ultimately, the Launching phase marked the official release of the system to users. The proponents provided comprehensive user training, including video tutorials and user manuals, to ensure users can effectively utilize the system's features. Additionally, they promptly addressed any lingering issues, such as user interface glitches or performance problems, ensuring a seamless transition and maximizing user satisfaction.

Project Development

The proponents' capstone project adhered to seven phases of the Agile Methodology, spanning a total of 34 weeks. The Planning phase (4 weeks) involved defining project goals, determining its scope, and identifying the resources required, laying the foundation for the project. The Design phase (4 weeks) focused on creating the system's blueprint, emphasizing user interface design, feature wireframing, and database architecture. The Development phase, the longest at 18 weeks, transformed these designs into functional code through extensive programming and component integration, serving as the project's backbone. Tools such as PHP, Laravel, CSS, Bootstrap, JavaScript, MySQL, wireframing tools, and Visual Studio Code were utilized to build and refine the system.

Following development, the Testing phase (4 weeks) ensured the system met quality standards by addressing bugs and resolving performance issues. The Deployment phase (2 weeks) involved preparing the system for launch by configuring settings, verifying compatibility, and conducting final checks. The Review phase (4 weeks) evaluated the project lifecycle, identified areas for improvement, and incorporated feedback from stakeholders for refinement. Finally, the Launch phase (1 week) introduced the completed system to its intended audience, provided user training, and resolved any last-minute concerns. Each phase was essential in delivering a robust and reliable capstone project.

Testing Procedure

The system underwent several tests. Unit Testing focused on verifying the correct operation of individual system components, such as data management, search functions, data entry forms, and report and document generation. System Testing evaluated how these components worked together, assessing workflows, registrations, logins, records management, and overall procedures.

User Acceptance Testing was carried out with actual users to ensure their satisfaction and validate the system's usability and functionality. Feedback from users helped identify any issues or areas needing improvement.

Additionally, Security Testing was performed to protect sensitive information, identify system vulnerabilities, and ensure data protection. The proponents implemented necessary security measures like authentication, role-based access controls, and audit logs to protect records and documents. Lastly, Usability Testing was conducted to evaluate the user-friendliness of the system for both residents and administrative personnel. This test focused on ensuring easy navigation, a friendly user interface, and a positive overall user experience.

Evaluation Procedure

This research was conducted in Barangay Olympia, Makati City situated at Fortuna Street, owing to the presence of the barangay hall in the area. The proximity of the barangay hall to the residences of its constituents ensures convenient access for data collection and interaction with community members.

Table 1 Likert Scale for System Evaluation

Numerical Scale	Descriptive Rating
5.0	Excellent / Highly Acceptable
4.0	Very Good / Very Acceptable
3.0	Good / Acceptable
2.0	Fair / Fairly Acceptable
1.0	Poor / Not Acceptable

In the evaluation procedure, it involved survey feedback from barangay officials, IT professionals, and residents. Respondents were selected based on their involvement with the system. A total of 50 responses were collected, comprising 30 residents, 4 barangay officials, and 16 IT professionals. The evaluation was done using a Likert scale to measure satisfaction, focusing on system performance, security, usability, and compatibility, based on the ISO/IEC 25010 criteria.

Table 2 Descriptive Evaluation of Mean

Rating	Mean Range	Verbal Interpretation
5	4.21 – 5.00	Excellent
4	3.31 – 4.20	Very Good
3	2.61 – 3.30	Satisfactory
2	1.81 – 2.60	Fair
1	1.00 – 1.81	Poor

The table presents a descriptive evaluation of average weighted scores, categorizing them into specific ranges and corresponding verbal interpretations. By calculating the weighted average rating for each dataset, the researchers gleaned valuable insights into the overall performance of the proposed system, thereby facilitating informed decision-making based on the summarized data.

Statistical Tools

Statistical tools used are average and weighted mean. They both involve analyzing and interpreting collected information to draw meaningful conclusions. Through statistical methods, patterns and trends within the data are identified to address the objectives effectively.

The average formula was utilized by researchers as it is crucial in evaluations and surveys as it provides a concise representation of the overall data. It helped to summarize the responses or scores collected, offering insights into the general perception or performance. This simplifies the interpretation process and aids in making informed decisions based on the collective data. In evaluations and surveys, the average formula is instrumental in deriving the mean ratings. This formula provided a descriptive evaluation of average scores, categorizing them into specific ranges and corresponding verbal interpretations. By calculating the average rating for each dataset, the researchers gained valuable insights into the overall performance of the proposed system, facilitating informed decision-making based on the summarized data.

Meanwhile, the weighted mean was used to provide a more detailed comprehension, considering the importance of different responses. By assigning weights to different data points based on their significance, the weighted mean ensures a more accurate representation of the dataset. Additionally, percentage analysis was used to measure the level of agreement among participants on aspects of the system, allowing for a clearer understanding to allow users to be satisfied with specific features. These statistical tools played an important role in assessing the system's effectiveness, helping the researchers make informed decisions about its performance, usability, and areas for improvement.

Project Structure

The study is confined to Barangay Olympia only. It focused on the Document and Records Management System of Barangay Olympia, Makati City. The proponents utilized PHP programming language along with HTML, CSS, and Bootstrap for the Graphical User Interface, and stored information using the MySQL Database. The Laravel Framework was also utilized. The duration of this study is the Second Semester of the Academic Year 2023 - 2024 and the First

Semester of the Academic Year 2024 - 2025.

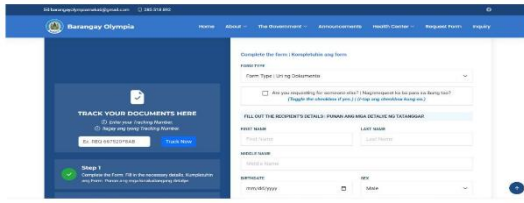


Figure 3. Request Form

This page allows users to request their documents. Additionally, users can track the status of their requests on the left side of the page. The user will choose the form type in the dropdown provided. Residents can access a homepage with an event calendar, announcements, barangay information, a gallery, weather updates, testimonials, and a health center page with schedules and tips. They can submit feedback, request documents, track requests using a tracking number, view barangay officials and department contacts, access transparency documents, read FAQs, and send messages via a real-time messaging module integrated with Messenger. Requests include certificates, clearances, IDs, and CCTV viewing.

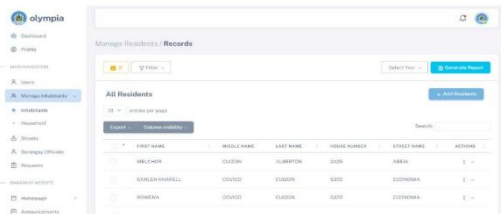


Figure 4. Manage Residents

This page displays all residents of the barangay and includes a button to create a new resident record. Additionally, there is a button to generate important reports regarding the residents. On the left side, users can filter the records for easier navigation. The actions column contains the buttons that will redirect the users to other pages, like the edit form page.

The system allows barangay admin to manage records, issue documents, and oversee operations efficiently. Staff may only access read-only functions. Features include a login module with validation and password recovery, a dashboard for analytics, to-do lists, an event calendar, announcement management, and an information module for barangay details. Admins can manage residents' and household records, generate summary reports, and issue documents in PDF format, including IDs, clearances, and job-seeker forms. Additional functionalities include feedback forms, user management, a transparency board, website management with backup and restore FAQ management and an organizational chart. Admins can also edit step-by-step processes for requesting documents.

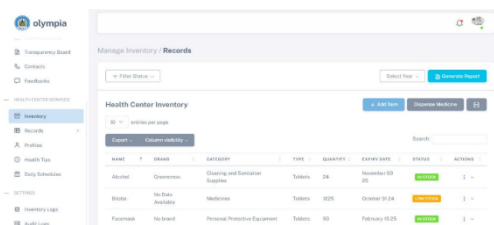


Figure 5. Manage Health Center Inventory

This page displays all inventory items of the health center, featuring a button to generate a summary report and a dropdown menu to filter the records for easier viewing. It also includes buttons for managing the inventory items. The actions column contains the buttons that will redirect the users to other pages, like the edit form page.

Health center admin can log in using a validated login module with password recovery and manage schedules for health services, health tips, and inventory. The inventory system includes a function to enable the system's camera for a barcode scanner to efficiently manage and track stocks, along with the ability to generate summary reports. Schedules and health tips are displayed on the residents' homepage, offering timely updates. Staff may only access read-only functions.

The limitations of the system include the lack of a financial module, which could improve the barangay's financial management, such as tracking expenses and budgeting. Additionally, the document request process is complex, requiring multiple forms to be filled out, which may confuse residents and lead to delays. Furthermore, the system's focus is on personal-use document issuance, excluding other types of requests, and it does not allow residents to cancel completed requests. These limitations restrict the system's overall functionality and may hinder user experience.

RESULTS AND DISCUSSIONS

The following table presents the overall rating of the system, summarizing the evaluation based on various criteria. It provides a total assessment that reflects the system's overall performance and user satisfaction, providing important insights into its effectiveness and areas of strength.

Table 3 Overall Rating

Criteria	Mean	Interpretation
Functional sustainability	4.88	Excellent
Reliability	4.81	Excellent
Portability	4.73	Excellent
Usability	4.79	Excellent
Performance efficiency	4.82	Excellent
Security	4.84	Excellent
Compatibility	4.88	Excellent
Maintainability	4.81	Excellent
OVERALL	4.82	Excellent

The system's overall rating is "Excellent," with an overall mean score of 4.82. Each criterion reflects strong performance, notably Functional Sustainability, and Compatibility, achieving a mean score of 4.88. Other criteria, including Reliability (4.81), Security (4.84), and Performance Efficiency (4.82), also received high ratings, demonstrating the system's excellent capabilities in various aspects. Portability and Usability maintain strong scores of 4.73 and 4.79, respectively, highlighting the system's adaptability and user-friendly design.

The dynamic web-based system for Barangay Olympia improves information management with advanced features and automation. It enhances administrator productivity and offers a user-friendly interface for residents. Tested by 50 participants, including officials and residents, the system earned a high score of 4.82, reflecting excellent reliability, usability, and performance. These results confirm the system's success in meeting objectives and improving barangay operations while strengthening resident engagement.

Thus, the proponents developed a Dynamic Web-based Information Management System for Barangay Olympia, achieving the goal of

improving barangay information management. The system streamlines document requests, resident records, health center inventories, and administrative controls. With a user-friendly interface, role-based security, and technologies like PHP, Laravel, and Bootstrap, it meets all project requirements. Usability tests based on ISO 25010 confirmed its effectiveness in enhancing accessibility and functionality for residents and administrators.

The study's major findings emphasize the system's success in improving barangay operations while maintaining data security and a smooth user experience. Although the system does not include a financial module, it effectively addresses the primary needs of the barangay administration. The study also suggests areas for further development, such as adding financial management, expanding document request options, and integrating health center record management. This paper has achieved its goal of providing an efficient system for barangay management and promises continued enhancements to broaden its functionality and further improve the user experience.

CONCLUSION

In summary, the proponents successfully developed a dynamic web-based information management system for Barangay Olympia, which improved record management efficiency by automating processes and increasing accessibility. All requirements set at the project's initial planning were met, ensuring the best functionality for both barangay admins and residents. The system includes features for requesting documents, managing resident and household information, tracking and handling health center inventory, and implementing administrative controls. With a user-friendly interface, it provides smooth experiences for both administrators and residents.

The development utilized PHP, Laravel, CSS, Bootstrap, and JavaScript, following the agile methodology to allow iterative improvements. Although the system does not include a financial module, it passed usability tests based on the ISO 25010 standard, ensuring ease of use and accessibility.

This study contributes to the field of information management systems by providing an efficient, realistic solution for local government units. The research has suggestions for both academic study in the development of similar systems and practical application in improving barangay administrative processes. The system's successful implementation demonstrates its promise for improving local governance, with possibilities for future growth. The paper achieved the creation of a fully functional and tested system that meets the needs of Barangay Olympia, Makati City.

RECOMMENDATION

To improve the system further, adding a financial module would enhance barangay finance management. Expanding document requests to include permits for activities, such as building permits, would increase its functionality. Integrating features for managing the Barangay Blotter and business registrations would enhance the system. Additionally, incorporating a patient records management system and appointment scheduling features for the health center would simplify healthcare services. This would improve access and patient satisfaction by reducing wait times and ensuring timely care. These improvements would make the system more comprehensive and efficient for all users.

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A TOUCH OF GREEN: A PHENOMENOLOGICAL STUDY ABOUT PLANT-BASED MENU OPTIONS IN SELECTED CASUAL DINING RESTAURANTS: GENERATION Z PERSPECTIVE

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ABSTRACT

This phenomenological study examines Generation Z university students' perceptions, acceptance factors, and underlying motivations regarding plant-based menu options in selected casual dining restaurants in Manila. Semi-structured interviews with 25 participants were analyzed using Interpretative Phenomenological Analysis and thematic analysis, revealing four key themes: digital media-driven awareness, sensory experience as the decisive factor, health and ethical considerations, and the alignment of dining choices with personal and global values. Findings demonstrate that sensory attributes, particularly taste and texture, are critical non-negotiable determinants of acceptance. Additionally, health benefits, ethical concerns such as animal welfare and sustainability, and economic factors, including price-value judgment and brand transparency, further shape preference and decision-making. The study identifies gaps in market awareness and emphasizes the importance of integrated marketing strategies combining digital and in-store promotion. Implications for hospitality management include prioritizing product quality, transparent communication about health and sustainability, and aligning the brand with consumer values to engage this demographic effectively. Recommendations for future research include expanding demographic diversity, longitudinal tracking of attitude changes, and cross-cultural studies to deepen understanding of plant-based food acceptance in evolving consumer markets.

Keywords: *Generation Z, plant-based diets, casual dining, consumer acceptance, sensory experience, sustainability, qualitative research*

INTRODUCTION

The inclusion of plant-based options in the hospitality industry's food sector has grown rapidly. It is projected to expand significantly by 2030 (Baum & Lockyer, 2020), driven by the increasing prevalence of veganism, vegetarianism, and flexitarianism. This trend has created a robust global market for plant-based ingredients, with market value expected to nearly double from USD 60.71 billion in 2022 to USD 120.74 billion by 2029, reflecting a compound annual growth rate of 10.32% (Athena Information Solutions Pvt. Ltd., 2024). Such growth presents both opportunities and challenges for food service establishments, particularly fast-casual restaurants, which have been adapting to this evolving consumer demand.

Fast-casual restaurants—hybrids of fast food and casual dining—have emerged as one of the most resilient segments in the hospitality industry. These establishments have continued to evolve by prioritizing customer satisfaction and offering higher-quality, fresher ingredients than traditional fast-food outlets (Compostable Food Service Disposables Market Size, Share & Trends Analysis Report, 2023). Their operational flexibility positions them to incorporate plant-based products into their menus more readily. Concurrently, plant-based producers have continued to innovate, replicating the flavor, texture, and nutritional profile of conventional animal-based proteins (Buokid, 2021, as cited in Abebe et al., 2024). These innovations have positioned plant-based alternatives as viable substitutes for meat, particularly among environmentally conscious consumers (Kopplin & Rausch, 2022, as cited in Mahasuweerachai et al., 2023). Beyond environmental concerns, ethical and health motivations have also influenced dietary shifts toward plant-based consumption.

While global trends highlight the rise of plant-based consumption, regional dynamics—such as those in the Philippines—present a more

nuanced picture. The COVID-19 pandemic accelerated interest in plant-based options, as Filipino consumers sought healthier alternatives (Singian, 2021, as cited in Monares et al., 2024). However, this initial surge has not been sustained. A 2024 Statista survey revealed that only 46% of Filipino respondents continued to consume plant-based meat alternatives (PBMA), a decline from the 65% reported in 2021 (Statista, 2024; Statista, 2022, as cited in Pagulayan et al., 2024). This downward trend suggests a gap between perceived health benefits and actual consumer behavior.

Despite the growing availability of plant-based options, several challenges persist. One notable barrier is the perception of taste. Consumers often associate healthy food with blandness, viewing plant-based options as mere imitations of traditional dishes (Sucapane, 2021, as cited in Sadfar, 2022). Supporting this perception, van Vliet et al. (2021) argued that plant-based and animal-based proteins should be viewed as complementary rather than interchangeable, given their distinct nutritional profiles. Additionally, concerns have been raised regarding the elevated sodium content in some plant-based substitutes, which may pose cardiovascular risks (Curtain & Grafenauer, 2019; Sha & Xiong, 2020; World Health Organization [WHO], 2020).

This study addresses critical gaps in the literature concerning customer satisfaction, perceived effects, and consumer perceptions of plant-based menu options in fast-casual dining establishments. Existing research has predominantly focused on health benefits (Thomas et al., 2023; Qin et al., 2022; Peña-Jorquera et al., 2023), environmental sustainability (Bryant, 2022), disease prevention (Peña-Jorquera et al., 2023; Bryant, 2022; Liang et al., 2024), dietary patterns (Craig et al., 2021; Storz, 2021), and purchase intentions (Monares et al., 2024;

Mustapa et al., 2024). However, limited empirical research has examined customer satisfaction and perceptions of plant-based menus in fast-casual dining, particularly in the Philippine setting.

Accordingly, this study aimed to examine student perceptions of plant-based menu options and their availability in fast-casual restaurants. By capturing insights from Generation Z consumers in Metro Manila, the research sought to inform menu diversification strategies and promote sustainable dining practices. The findings contribute to the broader literature on consumer behavior, plant-based diets, and the sociocultural dimensions of dietary choices. Moreover, the study provides practical implications for enhancing customer experience, informing strategic marketing decisions, and supporting sustainable development initiatives. Specifically, it aligns with five Sustainable Development Goals: SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 15 (Life on Land).

Theoretical Framing

This study is grounded in the Perceived Value Theory, developed by Zeithaml (1988), which posits that perceived value reflects a consumer's overall evaluation of a product or service's desirability, based on the trade-off between what is received and what is given (Sweeney & Soutar, 2001). Initially conceptualized as a unidimensional construct, perceived value was assessed by soliciting consumer feedback on the value derived from their purchases (Fernández & Bonillo, 2007). However, subsequent scholarship has expanded this view, suggesting that perceived value is a multidimensional construct encompassing various dimensions such as price, quality, benefits, and sacrifice. Fundamentally, perceived value arises from a consumer's subjective cost-benefit analysis when evaluating a product or service (Mahasuweerachai et al., 2023).

Given its emphasis on consumer evaluation and perception, Perceived Value Theory provided the most relevant conceptual foundation for this study. It supported the exploration of Generation Z consumers' perceptions of plant-based menu options in fast-casual dining restaurants, particularly through the lens of three key value dimensions: functional, emotional, and social value (Mahasuweerachai et al., 2023). These dimensions are instrumental in shaping purchase intentions and overall consumer satisfaction.

Functional value pertains to the tangible attributes of plant-based options, including appearance, taste, texture, nutritional content, and variety. These characteristics serve as critical determinants for student-consumers in assessing whether the product meets their expectations for quality and satisfaction. A visually appealing and flavorful plant-based dish may enhance its perceived functional value, thereby increasing its desirability among Generation Z consumers. Moreover, this generation's eating habits have been notably influenced by health concerns, particularly following the COVID-19 pandemic, which led to a preference for organic and nutritionally dense foods (Su et al., 2019, as cited in Meixner, 2024). As such, plant-based offerings in fast-casual restaurants may be perceived as aligning with their dietary goals. The availability of diverse plant-based options may further reinforce functional value and attract health-conscious consumers.

Emotional value refers to the positive affective responses elicited by plant-based products. These include feelings of well-being, fulfillment from making health-conscious choices, and excitement from encountering innovative menu items. When plant-based options are perceived not only as healthy but also enjoyable and desirable, they may foster emotional attachment and loyalty among Generation Z consumers.

Social value encompasses the extent to which plant-based consumption reflects and reinforces a consumer's self-concept, personal values, and social identity. For student-consumers, choosing plant-based options

may signify alignment with broader social groups that share similar ethical, cultural, or environmental beliefs. This includes considerations related to animal welfare, religious or cultural dietary practices, and sustainability. By opting for plant-based foods, Generation Z consumers can express their commitment to socially responsible, environmentally conscious lifestyles.

The Perceived Value Theory provided a robust framework for analyzing the multifaceted perceptions of Generation Z consumers toward plant-based menu options. It enabled a nuanced understanding of how functional, emotional, and social values collectively influence consumer behavior in fast-casual dining contexts. Consistent with this theoretical view, prior research on the Philippine restaurant setting demonstrates that perceived value is a key determinant in green behavioral intentions; Teng and Wu (2019) as cited in Ansaldo et al. (2022) indicated that customers preferred to dine at restaurants that implement green initiatives, particularly those offering sustainable products. However, within the restaurant context, food remains the core product, and thus food quality plays a central role in shaping consumers' perceived value satisfaction and loyalty across both casual and full-service dining establishments (Gumasing, 2025).

Thematic Network Map

Given the qualitative nature of this inquiry, the researchers developed a thematic network map rather than a traditional conceptual framework. This approach was grounded in the Perceived Value Theory (Zeithaml, 1988), which served as the theoretical underpinning for exploring Generation Z consumers' perceptions of plant-based menu options in fast-casual dining restaurants.

The thematic network map was constructed to illustrate the initial domains and subthemes that emerged from the literature, guiding the data collection and analysis. Specifically, knowledge of plant-based product variants, taste and flavor profiles, health and nutritional attributes, and ethical considerations was identified as a key factor influencing the perceived value of plant-based offerings. These dimensions collectively shaped Generation Z consumers' overall perception of plant-based options in fast-casual dining contexts. Figure 1 illustrates the thematic flow of the study.

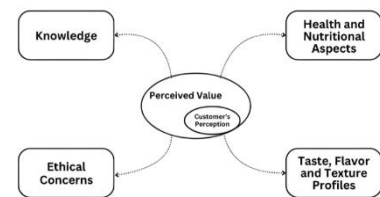


Figure 1. Thematic Map

Statement of the Problem

This phenomenological study investigated students' perceptions of plant-based menu options in selected fast-casual dining restaurants in Metro Manila. Specifically, it explored how students understood and experienced plant-based options in terms of taste, texture, and overall dining satisfaction. The inquiry was situated within the broader context of the rising popularity of plant-based diets and the increasing adoption of such offerings by fast-casual restaurant chains.

The study aimed to generate insights into the factors that influence students' acceptance and preferences for plant-based menu items, as well as the motivations and values that shape their choices. The research sought to deepen understanding of Generation Z's consumer behavior and inform menu development strategies in the fast-casual dining sector. Specifically, the following research questions were posed: (1). How do students perceive the plant-based menu options

offered at selected fast-casual dining restaurants within Taft, Metro Manila? (2). What factors influence students' acceptance and preferences for plant-based menu items in fast-casual dining establishments? (3). What underlying motivations and values shape Generation Z's choices regarding plant-based menu options in fast-casual dining contexts?

Literature Review

Food Sector Industry in the Philippines

The food and beverage industry in the Philippines is expected to continue growing in 2025. Consumer spending is expected to increase over the next few years, with annual sales growth projected to remain steady (Philippines Food & Drink Report - Q2 2025, 2025). According to the Food Industry Asia report, most Filipinos are shifting towards healthier, more functional food options as the number of health-conscious consumers increases (Wong & Wong, 2022). As Filipinos embrace the vegetarian and vegan trends, there is a rise in demand for plant-based menu options, which also has a positive impact on the environment for it minimizes the amount of greenhouse gases that are produced in the production of animal-based products because of the rising demand for healthier options, some cafes and restaurants in Manila are offering products like salads, smoothie bowls, and other vegan options (Wise, 2024). Although our country is well-known as a meat-consuming nation, meat alternatives are slowly entering supermarkets and convenience stores. According to Sentenac (2021), Steele Smiley, the CEO of Stalk & Spade, stated that the reason he is motivated to introduce a plant-based menu is He believes that it will have a significant effect on our well-being, also because of his son, he realized that it is not a wise choice to take him into same fast food restaurant because he is concerned about his son's well-being. At the same time, plant-based products are marketed as vegan, as seen on the menus of some fast-casual restaurants, such as Burger King, Shakey's, Army Navy, Pancake House, and Kenny Rogers (Valmonte & Cabico, 2022). Burger King offers Plant-Based X-tra Long Chicken Plant-Based Whopper (Avila, 2024; Medel, 2021). Shakey's offers plant-based pizza called "Good Taco Pizza." This launch marks the first time a vegan pizza has been introduced. Shakey's is also partnered with unMEAT, a meat alternative company that offers patties, nuggets, and meat toppings, as well as dairy-free cheese called 'unCHEESE' (Hong, 2021). In the Army Navy menu, options include Plant-Based Burrito, Plant-Based Breakfast Burritos, Plant-Based Naked Burritos, Plant-Based Burger, Plant-Based Double Burgers, Plant-Based Bully Boy Burger, Plant-Based Soft Taco, and Plant-Based Quesadilla (Baes, 2021). Beyond Meat's plant-based burger and Beyond Mashed Potato are the plant-based options that Kenny Rogers is offering (GMA News, 2021). Zark offers a 'V Burger' on its menu for plant-based eaters (Caesar, 2024).

Emergence of Plant-based menu

The plant-based diet originated when the Greek philosopher Pythagoras praised the health benefits and taught the moral value of abstaining from animal slaughtering, in which he and his disciples ate only bread, honey, and vegetables (Clem, J., & Barthel, B., 2021). However, the term "plant-based" was coined in 1980 by Colin Campbell. It has a similar definition to vegan food, but focuses on using or consuming products made from plant-derived ingredients (Broomfield, 2021). It is a relatively new concept used by the scientific community to describe eating patterns characterized by an extensive intake of plant-dominant foods while excluding all animal products (Storz, 2021). One way to reduce meat consumption is by replacing it with plant-based alternatives or more environmentally friendly food options (Andreani et al., 2023). If a complete transition to plant-based food in the market is not yet possible, having options that include plant-based products would still cater to the growing demand.

Consumers are becoming increasingly aware of the benefits of plant-based products would still cater to the growing demand. Consumers are becoming increasingly aware of the benefits of plant-based food options, are more open about their ethical food choices, and are becoming aware of their food consumption habits, which can result in reduced consumption of animal meat (Perez-Cueto, 2021). Plant-based menus are more likely to be chosen by consumers when advertised as beneficial for the planet or society, rather than labeled as vegetarian options (Rosenfeld et al., 2022). Giving it more recognition and having a variety of options will help reduce meat consumption (Kwasny et al., 2022).

Generation Z's Perspective

The customer's perspective is how a company interprets its customers' feedback, recognizing consumers' thoughts and experiences with its products and services. A company needs to understand its customers' insights, as these will impact its financial and sales performance (Villegas, 2023). Both millennials and Generation Z are adopting vegetarian and vegan diets due to their increased awareness of the environmental impact of meat consumption and a strong sense of social responsibility (Laoudai, 2024). Despite people starting to accept meat alternative products, they still hold a small market share, and conducting more studies on plant-based alternatives presents a great opportunity for the food industry to improve consumer acceptance. A recent study found that 30-40% of people were hesitant to choose plant-based burgers due to unfamiliarity with the flavors, tastes, textures, appearances, and costs of plant-based products on the market (Carlsson et al., 2021). Negative feedback about plant-based meat comes from individuals who have not tried plant-based products or who are accustomed to eating and enjoying meat, leading them to refrain from reducing their meat consumption, regardless of the cost of these products (Cutroneo et al., 2022; Zhao et al., 2022).

Perceived Value

Perceived value refers to the amount a customer is willing to pay for a specific product or service. It is based on how the product satisfies the customer's needs and desires, and on whether other businesses can or cannot offer the same (Nancholas, 2023). Zeithaml (1988, p. 14) defined perceived value as "The consumer's overall assessment of the utility of a product based on the perception of what is received and what is given" (as cited by Solakis et al., 2022; Sevilmiş et al., 2022; Xu et al., 2022). Furthermore, it comprises four dimensions: product value, emotional value, social value, and perceived sacrifices (Ines & Moreira, 2023). By understanding Generation Z's perceived value of plant-based products, marketers can gain a deeper understanding of their customers' perspectives on plant-based consumption (Mahasuweerachai et al., 2023). According to Tedja et al. (2024), their study found that perceived value is linked to satisfaction and the intention to continue a partnership or connection with a business. In this study, perceived value will determine customer satisfaction and the intention to repurchase plant-based food menu options. The study by Afianto and Waskito (2025) states that consumers' trust in product claims plays a crucial role in determining whether perceived value drives their purchase intention. Price is also a factor that can influence a customer's purchase intention, serving as a basis for determining a product's value and whether it is considered cheap or expensive (Sharif et al., 2023). By perceived pricing, restaurants can determine their perceived value based on customers' expectations and aim for customer satisfaction and repeat business (Hashim et al., 2024). As indicated in the study by Kovacs and Karesztes (2022), the concept of sustainable food consumption in this era has also led modern customers to include food reliability as part of their perceived value, considering aspects such as health, environment, and ethics when purchasing food. This appeals to customers' willingness to pay a premium for the product's sustainable food attributes. In addition, taste

preference serves as a primary sensory modality in evaluating overall sensory satisfaction of consumers, including texture, appearance, and aroma (Andersen et al., 2018). Lesme et al. (2019) also supported this statement, arguing that consumer preferences for food products are largely determined by their sensory qualities, including perceptions of texture, taste, and flavor, which are integrated throughout consumption and influence consumer satisfaction. Aside from sensory experiences (taste, texture, flavor), quality (freshness), satiation, food variety, and price, these factors are also key determinants of consumers' food and dining choices (Gluchowski et al., 2021). Meanwhile, product knowledge has also been considered an influential factor in customer-perceived value, with a correlation with environmental concern. A greater understanding of problems and how to address them increases the likelihood that individuals will take action to protect the environment (Kim & Hwang, 2020). Moreover, product knowledge and perceptions of product quality developed from advertisements influence consumers' purchase intentions (Harmen et al., 2022). The amount of information a consumer knows about a specific product or brand not only facilitates perception development but also serves as the foundation for making informed judgments (Hatta et al., 2018, as cited in Setyadi, 2024).

Environmental Concern and Sustainability. Environmental concerns encompass awareness of environmental issues, understanding of how human activities impact them, and assistance in resolving these issues (Lou & Li, 2021). Previous studies have shown that environmental concerns significantly impact customers' purchasing decisions for environmentally friendly products (Bulut et al., 2021). Plant-based food options are considered more environmentally friendly than those derived from animal meat. Plant-based products use fewer resources from water and land, and they also produce fewer greenhouse gases than animal-based products. Plant-based food options are more sustainable than animal-based food options (Chai et al., 2019; Poore & Nemecek, 2018; Rabies et al., 2020; Springman et al., 2018; Willett et al., 2019) (as cited in Perez-Cueto, 2021). According to Jazbec et al. (2022), replacing beef patties with plant-based beef patties will have an estimated 90% reduction in global warming potential (GWP), while replacing chicken patties with plant-based chicken patties will deduct 60% in GWP. For a consumer to be influenced, their country and region have a significant impact on their perceptions and motivations, influenced by factors such as cultural differences, religion, traditions, attitudes, behaviors, and origin, which may vary across countries and regions (Schreuders et al., 2022). Social media can influence people's decisions to make sustainable purchasing choices, thereby altering sustainable consumption globally (Zafar et al., 2021). According to a 2023 report by ProVeg International, five major companies introduced plant-based menu options in the US, Europe, and South Africa. They have mentioned Burger King, Subway, and Pizza Hut, all of which are part of the fast-casual restaurant category. They appeal to this generation because they are more likely to purchase sustainable products and show loyalty to eco-conscious consumers.

Product Knowledge. Product knowledge refers to the awareness and level of expertise about a product that can influence consumer decisions. The study also states that customers will gain knowledge of the product through the following approaches, which aim to promote products to consumers by focusing on either benefits or attributes (Zhang et al., 2023, pp. 3–4). Consumers who have sufficient knowledge and information about plant-based foods can help them choose sustainable products in the market (Marshall et al., 2022). Cordelle et al. (2022) found that even though consumers are open about trying new food innovations like plant-based meat, they are having second thoughts about spending on it because they have low to zero knowledge and understanding about the product and having more exposure about its information may lead to greater acceptance to the public or consumers (De Oliveira Padilha et al., 2022). Having a complete label on the pack, including nutritional information and

ingredients, is important for health-conscious consumers to embrace plant-based foods (Alcorta et al., 2021).

Health and Nutritional Aspects. Health is defined by the World Health Organization (WHO) as a complete state of well-being encompassing physical, mental, and social aspects, rather than merely the absence of illness. At the same time, nutrition is essential for achieving good health and the body's development (Callahan et al., 2020). As a result of the COVID-19 pandemic, people are becoming aware of the risks posed by zoonotic diseases. People are concerned, especially about food products, and desire to boost their immunity to improve their health. Many people adopted plant-based diets during the pandemic (Hambardzumyan & Gevorgyan, 2021). Jung et al. (2022) stated that plant-based meat is gaining more recognition than animal meat due to its protein source. However, to maintain the popularity of plant-based meat, it must be more efficient and less expensive than animal meat, as it is often claimed to be. Health-conscious individuals are increasingly seeking vegetarian diets and food products that do not contain animal meat (Kurek et al., 2022). Plant-based diets are generally healthy, but some meat alternatives may not provide a complete range of nutrients, as they often contain less vitamin B12 and are higher in sodium (Penna Franca et al., 2022). Additionally, consumption of meat may increase the risk of several digestive diseases (Papier et al., 2021). People who choose to eat less meat or become flexitarians are increasingly motivated to improve their health and nutrition while still enjoying meat occasionally (Grasso et al., 2021; Newton & Blaustein-Rejto, 2021).

Taste, Flavor, and Texture. Palmer et al. (2024) stated that taste is the process by which the mouth perceives flavors when it is activated or stimulated. On the other hand, Hall (1968) defined flavor as “the sensation produced by a material taken in the mouth, perceived principally by the senses of taste and smell, and also by the general pain, tactile, and temperature receptors in the mouth. Flavor also denotes the sum of the characteristics of the material which produce that sensation.” Taste and flavor are crucial for attracting consumers, given their diverse preferences and wants. A study shows that consumers are more likely to accept plant-based foods if their flavor is similar enough to that of traditional meat (Hossain et al., 2024). A study suggests that three key criteria for a consumer to be willing to try, pay, and repurchase are taste and flavor, texture, and smell (Wilks et al., 2021). According to Biazotto et al. (2025), creating plant-based meat alternatives involves combining plant proteins with other ingredients to maintain a meaty texture and replicate the taste of traditional meat products. Food essentialism is the concept that some categorized foods believe to have similarity on taste, texture, and nutrition because of the source they came from are one, so people who believes in this idea might also be thinking that foods that have the same appearance and taste have the same essence, even though their main sources is different (Cheon et al., 2024). According to Kaleda et al. (2021), some meat alternatives contain ingredients such as oats and peas. This combination gives the flavor a strong, cereal-like quality that overshadows legume and other bitter notes. Additionally, off-flavors such as beany flavor, bitterness, and aftertaste are often present in plant-based alternatives. These off-flavors can be attributed to the plant ingredients used, their processing, or storage (Wang et al., 2022).

METHODS

Research Design.

This study employed a qualitative phenomenological approach to explore the lived experiences and perceptions of Generation Z students regarding plant-based menu options in fast-casual dining restaurants. Phenomenology, rooted in the philosophical works of Husserl, Heidegger, Sartre, and Merleau-Ponty, gained prominence in the early twentieth century as a method for understanding human experience beyond mere sensory input (Stanford Encyclopedia of Philosophy,

2013). Husserl (1931) defined phenomenology as the study of phenomena as they appear in consciousness, emphasizing the subjective nature of experience. Alase (2017) further asserted that phenomenology allows researchers to uncover the essence of participants' experiences through deep reflection and interpretation.

This approach was deemed appropriate for the study as it facilitated an in-depth understanding of students' beliefs, emotional responses, and perceptions of plant-based food options. Through semi-structured interviews, the researchers captured rich narratives that illuminated how students interpreted taste, texture, health benefits, environmental sustainability, and ethical considerations in their dining choices. The phenomenological method also enabled the researchers to bracket their own assumptions and engage in reflexive analysis, ensuring that the findings authentically represented the participants' voices. By valuing the depth and complexity of individual viewpoints, this design provided a robust framework for examining how broader social, cultural, and health-related factors influenced food choices. It also enabled thematic saturation, in which recurring patterns and meanings emerged across diverse student experiences.

Research Locale.

The study was conducted in Taft, Manila, a vibrant urban corridor known for its concentration of academic institutions and fast-casual dining establishments. In the Philippines, dining out is deeply ingrained in social and familial culture, contributing significantly to the national economy. The food service sector generates over PHP 300 billion annually, with fast-casual dining, fast food, and street food comprising the bulk of this revenue (Balita, 2025).

A key driver of growth in the foodservice market is the rise of health-conscious consumers seeking nutritious and sustainable alternatives. In response, fast-casual restaurants have begun to innovate their menus by incorporating plant-based, low-calorie, and organic options (Singh, 2025). Prominent chains such as Burger King, Pancake House, Army Navy, Shakey's, Kenny Rogers, and Zark's Burger have introduced plant-based offerings to meet this demand (Sy, 2022).

Taft's proximity to these establishments and its dense student population made it an ideal locale for the study. Figure 2 presents a map of Manila highlighting the selected colleges and universities where participants were recruited.

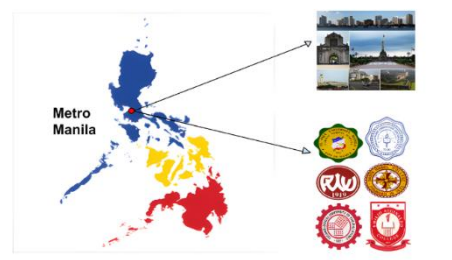


Figure 2. Manila Locale

Participants of the Study.

The participants in this study were Generation Z students, defined as individuals born between 1996 and 2010, specifically ages between 18 and 28, and were selected. This cohort has significantly influenced the growth of fast-casual dining, with 67% expressing a preference for such establishments. According to the U.S. Census Bureau, individuals aged 18–24 account for approximately 12% of restaurant spending (Harris, 2024), underscoring their significant role in this inquiry.

A total of 25 participants were selected from five universities in Taft,
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Manila: the Philippine Women's University, St. Paul University, Technological University of the Philippines, Emilio Aguinaldo College, Philippine Christian University, and Santa Isabel College. This sample size aligned with Creswell's (2007) recommendation of five to twenty-five participants for phenomenological research, ensuring sufficient depth and diversity of perspectives.

The study employed purposive sampling, also known as judgment sampling, to identify participants who met specific criteria relevant to the research objectives (Nikolopoulou, 2023). Participants were selected based on their academic background and dining behavior, particularly those enrolled in programs such as Hospitality Management, Food Technology, and Nutrition and Dietetics. These students were presumed to possess foundational knowledge of plant-based food content, value, and benefits. The inclusion criteria were as follows: (1) Participants must be part of Generation Z (ages 18–28). (2) Participants must be enrolled in one of the identified colleges or universities in Taft, Manila. (3) Participants must be customers of fast-casual restaurants offering plant-based options, specifically Burger King, Pancake House, Army Navy, Shakey's, Kenny Rogers, or Zark's Burger.

This sample selection enabled a nuanced exploration of perceptions of plant-based foods across academic and experiential contexts.

Instrumentation.

Data collection comprised two components: demographic profiling and semi-structured interviews. The first component involved gathering demographic data to ensure participant eligibility and contextualize responses. This included age, gender, educational status, enrolled institution, academic program, and dining history with fast-casual restaurants. Demographic profiling served as a foundational tool for participant qualification and thematic analysis (Marshall et al., 2022; Connelly, 2013).

The second component utilized semi-structured interviews, chosen for their balance of consistency and flexibility. This format allowed researchers to guide the conversation while remaining open to emergent themes and participant-led insights (Fylan, 2020). Semi-structured interviews were particularly effective in uncovering the "why" behind Generation Z's perceptions of plant-based options, enabling deeper exploration of values, motivations, and lived experiences. The interview guide was composed of four segments: (1) Warm-up questions, designed to build rapport and ease participants into the conversation. (2) Core questions, focused on eliciting detailed narratives of participants' experiences with plant-based menu items. (3) Probing questions, used to clarify and expand upon key responses, enhancing the richness of the data. (4) Wrap-up questions, provided a reflective and respectful conclusion to the interview, allowing participants to summarize or share final thoughts (Oerther, 2021).

Data Collection.

The researchers adhered to the ethical research standards set by the Colegio de San Juan de Letran Research and Publication Department (RPD). Before data collection, formal permission was obtained to conduct the study, and participants were provided with informed consent forms outlining the study's purpose, procedures, confidentiality safeguards, and their right to withdraw at any time without penalty. These forms were distributed digitally via Google Forms and included detailed information on data usage, storage, and protection protocols, and were primarily used for demographic profiling of participants.

Moreover, demographic profiling was utilized as a basis for the

thorough selection of participants to ensure that only individuals who met the criteria were qualified to be part of the study. This process helped on the relevance and appropriateness of the participants in relation to the objective of the study.

Data collection was conducted through semi-structured interviews, guided by a four-part question framework. Interviews were conducted either face-to-face or via secure digital platforms, such as Zoom or Google Meet, depending on the participant's preference and availability. Sessions were scheduled at times and locations convenient to the participants, with in-person interviews conducted in private, neutral spaces near their respective universities to ensure comfort and psychological safety when sharing personal and sensitive experiences.

Each interview lasted approximately 30 to 45 minutes, allowing participants sufficient time to reflect, articulate their thoughts, and engage meaningfully with the questions. Prior to the interview, participants were informed of the voluntary nature of their involvement, the confidentiality of their responses, and the use of audio or screen recordings for transcription. Recordings were made only with explicit consent and were stored securely in encrypted digital folders accessible only to the research team.

To uphold methodological rigor, the researchers practiced bracketing—setting aside personal biases and preconceptions—to ensure that the data reflected the authentic voices of the participants. Reflexive journaling was also employed throughout the data collection process to document the researchers' observations, emerging insights, and ethical considerations. Data saturation was continuously monitored, and interviews concluded once recurring patterns and themes began to stabilize across participants.

All interview data were manually transcribed and organized according to emergent themes. Transcripts were anonymized to protect participant identity and prepared for subsequent analysis using Interpretative Phenomenological Analysis (IPA) and thematic coding procedures.

The researchers have provided quota sampling, selecting five (5) participants from each participating school. Originally, thirty (30) participants were interviewed; however, data saturation was reached after the twenty-fifth (25) interviewee, as no new themes and insights emerged. The participants' responses became repetitive, indicating that the data collected were sufficient to meet the objectives of the study.

Data Analysis.

The researchers employed a dual-layered analytical approach, integrating Interpretative Phenomenological Analysis (IPA) with thematic analysis to explore Generation Z students' perceptions of plant-based menu options in fast-casual dining contexts.

IPA was utilized to uncover the nuanced meanings embedded in participants' lived experiences. As a qualitative method, IPA emphasizes the interpretative relationship between the researcher and participant, focusing on how individuals make sense of their personal and social worlds (Smith, 2004, as cited in Kellett et al., 2010; Smith et. al, 2021). Through iterative engagement with the data, the researchers aimed to comprehend the emotional, cognitive, and contextual aspects of plant-based food consumption, encompassing satisfaction, ethical alignment, and health-related motivations. To complement IPA, thematic analysis was conducted following Braun and Clarke's (2006) six-phase framework: (1) Familiarization – Researchers repeatedly read the transcripts to immerse themselves in the data and note initial observations. (2). Coding – Key phrases and

segments were systematically coded to capture meaningful units of information. (3). Generating Themes – Related codes were clustered into broader thematic categories reflecting shared patterns across participants (4). Reviewing Themes – Themes were refined and validated against the full dataset to ensure coherence and representativeness. (5). Defining and Naming Themes – Each theme was clearly defined and labeled to reflect its conceptual essence and relevance to the research questions. (6). Reporting – A narrative synthesis was developed, integrating thematic insights with illustrative quotes to contextualize findings and support interpretations.

The integration of IPA allowed for deeper interpretative engagement with the data, enabling the researchers to explore not only what participants said but also how they made sense of their experiences. This enriched the thematic analysis by adding layers of emotional and cognitive depth to the emergent categories. Themes were organized around key domains, including taste and texture preferences, perceived health benefits, ethical and environmental considerations, product knowledge, and social identity. This approach facilitated a comprehensive understanding of how Generation Z students evaluate plant-based options and the values that inform their dining choices.

Ethical Considerations and Data Protection Plan.

This study was conducted with strict adherence to ethical research standards and the provisions of the Philippine Data Privacy Act of 2012 (Republic Act No. 10173). The researchers ensured that all scholarly sources were properly cited and acknowledged, and that intellectual contributions from other authors were credited in accordance with academic integrity protocols. Prior to data collection, the researchers sought formal approval from the Colegio de San Juan de Letran Research and Publication Department (RPD). They obtained a certification of exemption from full ethics review. All participants were invited to participate in the study voluntarily and were provided with a comprehensive informed consent form. This form outlined the study's purpose, procedures, potential risks and benefits, confidentiality measures, and the participants' right to withdraw at any time without consequence. Consent was obtained digitally via Google Forms or in person, depending on the interview modality.

To uphold confidentiality and privacy, all personal data and interview responses were treated with strict discretion. Participants were assigned pseudonyms or unique identifiers to ensure the anonymity of their responses during transcription and analysis. No identifying information was disclosed at any point in the study, and all data were stored in encrypted, password-protected digital folders accessible only to the principal researchers and the research adviser.

The data protection plan included the following safeguards: (1) Secure Storage: Audio recordings, transcripts, and consent forms were stored in encrypted cloud-based drives with restricted access. (2) Limited Access: Only the core research team and the adviser had access to raw data. No third-party individuals or institutions were granted access. (3) Data Retention and Disposal: Data will be retained for a maximum of one year following the completion of the study and will be permanently deleted thereafter using secure digital erasure protocols. (4) Participant Control: Participants were given the option to review their transcripts and request redactions or clarifications prior to final analysis. (5) Transparency and Respect: Participants were informed that they could decline to answer any question they found uncomfortable and that their preferences regarding the inclusion or exclusion of sensitive information would be honored without question.

Throughout the research process, the researchers practiced reflexivity and bracketing to minimize bias and ensure that the participants'

voices were authentically represented. The study prioritized the dignity, autonomy, and well-being of all participants, and no data were included without explicit permission. Ethical rigor was maintained not only in the handling of data but also in respectful engagement with participants as co-constructors of knowledge.

RESULTS AND DISCUSSION

This chapter presents the findings derived from the semi-structured interviews with 25 Generation Z students from selected universities in Taft, Manila. The data were analyzed using Interpretative Phenomenological Analysis (IPA) and thematic analysis, which yielded four overarching themes. The presentation is structured around three main research questions to ensure a clear, direct exploration of participants' lived experiences with plant-based menu options in fast-casual dining restaurants.

Perceptions of Plant-Based Menu Options

This chapter presents the findings from semi-structured interviews with 25 Generation Z university students from selected institutions in Taft, Manila. Using Interpretative Phenomenological Analysis (IPA) and thematic analysis, four overarching themes emerged. The findings are organized around three main research questions that focus on participants' lived experiences with plant-based menu options in fast-casual dining restaurants.

Gen Z perceptions of plant-based foods reflect a complex interplay of digital awareness, sensory evaluation, and critical health consciousness.

The first research question examines students' perceptions of plant-based menu options at selected fast-casual dining establishments. Three themes emerged: (a) plant-based menu awareness and initial framing, (b) sensory experience as the decisive factor, and (c) perceived benefits alongside hidden drawbacks.

Table 1. Plant-Based Menu Awareness and Initial Framing

Category	Theme	Significant Statement
Knowledge & Information Sources	Theme 1: Plant-Based Menu Awareness and Initial Framing	"I'm familiar, kasi, nakita ko lang sya sa social media, yan, direct to the point, yun lang talaga yung pinagkuhanan ko ng info (I'm familiar because I only see it in social media, that's it, direct to the point, that's my only source of info)."- P1
		"Ako, no. Kasi, knowing sa mga fast food, puro kasi mga meat... Sa inyo ko lang mismo nalaman na may mga fast food pal ana, ayun, nagse-sell din sila ng mga plant-based (Me, no. Because, knowing fast food, it's only mostly meat... I only just found out from you that there are fast-food places that, well, also sell plant-based items)."- P17

Table 1 indicates that participants' awareness of plant-based menu options was primarily influenced by digital exposure, especially through social media platforms such as Instagram, TikTok, and Facebook. Participants associated plant-based foods with being "trendy," "healthy," and "sustainable," demonstrating that online media plays a crucial role in shaping Generation Z's dietary perceptions. However, the thematic table also reflects a gap in awareness, as some participants only learned that fast-food chains offered plant-based items during the interview itself.

This suggests Participants' awareness of plant-based options is largely shaped by digital media, particularly social media platforms. One participant shared, "*I am familiar, kasi, nakikita ko lang siya sa social media*" (P1), indicating that digital exposure informs initial framing.

Participants frequently associated plant-based foods with attributes such as "*interesting, sustainable, and trendy*" (P7). This finding aligns with previous research documenting digital media's influence on health-conscious trends (Zafar et al., 2021; Wong & Wong, 2022). Supporting this, a nationwide survey from GMO (2025) revealed that 91% of Filipino respondents recognize plant-based foods as healthier and more sustainable, with 85% favoring increased availability in food service outlets. Similarly, De La Cruz and Ledesma (2024) found that 91% of medical students became aware of plant-based diets predominantly via social media.

According to Salam et al. (2024), Generation Z—characterized as digital natives—actively incorporate technology in consumption decisions and prioritize brands with social responsibility and sustainability ethos. However, gaps in awareness persist; for instance, Participant 17 stated, "*Sa inyo ko lang mismo nalaman na may mga fast food pala na... nagse-sell din sila ng mga plant-based,*" reflecting limited knowledge about plant-based options in familiar fast-food chains. This finding is consistent with Valmonte and Cabico's (2022) observation that market penetration of such options remains incomplete. Additionally, Raptou et al. (2024) reported that knowledge gaps and unfamiliarity hinder willingness to adopt plant-based diets internationally.

Building on this notion, participants also revealed the uncertainty about how they defined and understood the word "Plant-based". Throughout the interviews, the term was frequently used to describe foods like vegetables, tofu, and mushrooms that are mostly or fully manufactured from plants. As one participant quoted, "*hindi kasi ako aware don, akala ko meat talaga siya, akala ko meat talaga, hindi siya plant*". Many participants used the phrases "plant-based" and "vegetarian" or "vegan" interchangeably, as evidenced by their answers and research (Clem & Barthel, 2021; Broomfield, 2021). Rather than a clear comprehension, this suggests a limited conceptual overlap. Some students used the phrase more literally, while others correctly identified that plant-based meals might include items that imitate meat using elements sourced from plants. In contrast to vegan or vegetarian cuisine, one participant stated that they saw plant-based foods as merely comprising vegetables rather than necessarily being animal substitutes. This analysis shows that although

Generation Z consumers are aware of plant-based alternatives, they are not well-versed in how they are different from vegetarian or vegan options. This conceptual ambiguity highlights the need for restaurants to provide clear labeling, accurate menu descriptions, and educational marketing to inform customers better. Xavier et al. (2025) further note that despite increased awareness, many consumers view plant-based products as niche health or environmental alternatives rather than everyday dietary staples.

Table 2. Sensory Experience as the Decisive Factor

Category	Theme	Significant Statement
Sensory Experience & Evaluation	Theme 2: Sensory Experience as the Decisive Factor	"Yes, because if it doesn't look appetizing for me as a "pihikan" I wouldn't try or order it." -P24
		"It's very mushy, wala yung saltiness nya na katulad nung parang sa meat itself (it's very mushy, it doesn't have the saltiness like the meat itself)."- P2
		"Sometimes if not expected well the texture can be weird, sometimes they're stinky, spongy and it can be kind of off-putting in comparison to the real product." -P8

Table 2 highlights that taste, texture, and aroma are the most influential factors determining acceptance of plant-based menu items. Participants

commonly described unfavorable experiences, using terms like “mushy,” “spongy,” or “off-putting,” indicating that sensory dissatisfaction remains a major barrier to acceptance. Although health or environmental benefits have been acknowledged, poor sensory quality discouraged repeat purchases.

These findings point to the crucial roles of sensory perception in shaping consumer attitudes towards plant-based options. Sensory perceptions strongly influence acceptance of plant-based foods. Participants frequently reported negative sensory experiences, describing textures as “*very mushy*” (P2) or “*stringy, spongy and... off-putting*” (P8). These perceptions represent significant barriers, corroborated by the literature, which identifies sensory attributes as critical determinants of acceptance (Carlsson et al., 2021; Safdar, 2022). Raptou et al. (2024) found that although Generation Z associates plant-based eating with health and sustainability benefits, sensory satisfaction largely governs adoption willingness. Kumari et al. (2023) similarly emphasize texture as a key factor in product quality, acceptability, and consumers’ willingness to pay.

In a Philippine context, Flores et al. (2021) demonstrated that Filipino consumers’ preferences for soybean-based plant alternatives are strongly influenced by taste, texture, aroma, and freshness. This aligns with participants’ accounts, which emphasize sensory experience as paramount in food choice. Furthermore, sensory challenges exist because plant-based products often struggle to replicate the umami flavor and texture profile characteristic of meat (Giacalone et al., 2022; Mouritsen & Styrbæk, 2020). Thus, despite recognized benefits, sensory barriers remain a critical challenge for broader acceptance.

Table 3. Perceived Benefits and Health-Related Drawbacks

Category	Theme	Significant Statement
Perceived Health & Wellness	Theme 3: Perceived Benefits and Health-Related Drawbacks	“For me, it’s a yes, if i-cocompare sya sa other menu, mas healthier sya kahit prineprepare sya in the same way (for me, it’s a yes if you compare it to other menu items, it’s healthier even if it’s prepared in the same way).” -P25
		“For me, I don’t fully consider it as healthy kasi ah yan, kasi meron syang part na healthy kasi plant-based sya, pero in the other hand, processed food parin yon, kaya hindi sya fully healthy (For me, I don’t fully consider it as healthy part because it’s plant-based, but on the other hand, it’s still processed food, so it’s not fully healthy).” -P1
		“...people immediately perceived them as healthy kasi nga “Plant-based” sya pero similar to normal foods in a fast-food (fast-casual) restaurant they’re also very in high in frying and salt... kunh nagluto ka kunyare ng mushroom burger pero kung prinito mo ng deep fry it kinda defeats the purpose, I think?” -P2

In Table 3, participants acknowledged the health advantages of plant-based menus—such as lower cholesterol and reduced disease risk—but also raised concerns about preparation methods and nutritional content.

In line with this, participants generally perceive plant-based foods as healthier alternatives to meat (P25), yet they critically evaluate their healthfulness. For example, one participant remarked, “...*kung nagluto ka kunyare ng mushroom burger pero kung prinito mo ng deep fry it kinda defeats the purpose, I think?*” (P2), highlighting awareness about preparation methods undermining health benefits. This nuanced perspective reflects concerns noted in the literature regarding sodium content and processing in meat analogues (Curtain & Grafenauer, 2019;

Sha & Xiong, 2020). Traditional vegetarian dishes use minimal oil and salt, while various modern plant-based meat alternatives created in the form of burgers, nuggets, and sausages are fried and high in fat, sodium, and calories. Vegan milks and snacks often contain added sugars and salt, which may lead consumers to adopt less nutritious diets despite health-focused intentions unknowingly (Tso & Forde, 2021). Generation Z consumers appear to assess health claims thoughtfully, considering ingredient quality and cooking techniques. Transparency and healthier preparation methods, such as grilling rather than frying, may enhance appeal to this demographic.

Factors Influencing Acceptance and Preference

This research question explores the factors that influence Generation Z students’ acceptance of and preference for plant-based menu items. Two key themes emerged: (a) sensory experience as the decisive factor and (b) alignment of dining choices with personal and global values. The analysis points to two dominant themes that govern these decisions: Theme 2: Sensory Experience as the Ultimate Factor and Theme 4: Aligning Dining Choices with Personal and Global, Values.

Table 4. Sensory Experience as the Ultimate Factor

Category	Theme	Significant Statement
Sensory Experience & Evaluation	Theme 2: Sensory Experience as the Ultimate Factor	“Honestly yes, because the taste is the bigger, the biggest factor for me... I don’t want to feel like I’m sacrificing taste just to eat healthier.” -P22
		“Uh hindi ako fan kasi hindi ko talaga fully nalalalahan yung meat kasi very fan ako ng mga meats talaga (Uh, I’m not a fan because I can’t fully taste the meat, because I’m a huge fan of meats).” P1
		“uhm... it depends because if it’s executed well, yes. And if not, no.” -P8

Table 4 reinforces that sensory quality is the non-negotiable determinant of acceptance. Regardless of price, sustainability, or health benefits, participants stated that taste remains the deciding factor in choosing plant-based meals.

Consistent with these results, the analysis further confirms that sensory experience ultimately dictates consumers’ acceptance of plant-based foods. Participant 22 expressed, “*Honestly, yes, because the taste is the biggest factor for me... I do not want to feel like I am sacrificing taste just to eat healthier*” (P22). This underscores the centrality of taste, which is widely recognized in food consumption literature as a primary driver of food choice and preference (Gluchowski et al., 2021). Similarly, Ling and Hedman (2025) emphasize the importance of complex flavor profiles in shaping dietary behaviors and consumer preferences.

Kershaw and Nolden (2023) also argue that while taste is a key driver of food purchases, sensory appeal remains a significant barrier to the acceptance of plant-based foods across multiple countries. Reflecting this, Participant 8 noted, “*uhm... it depends because if it is executed well, yes. And if not, no*” (P8), indicating conditional acceptance based on product quality. This finding is corroborated by Kumari et al. (2023), who state that consumers’ acceptance of meat alternatives depends on ingredient composition and processing methods, which directly influence nutritional value and sensory properties, including texture, color, and visual presentation. Despite taste and sensory appeal being crucial motivators, research indicates a gap in consumer acceptance due to sensory barriers. For example, nearly half of Americans report disliking the taste of plant-based foods, and over two-thirds are willing to consume more plant-based options if the taste improves (Kershaw & Nolden, 2023).

Table 5. Aligning Dining Choices with Personal and Global Values

Category	Theme	Significant Statement
Perceived Health & Wellness	Theme 4: Aligning Dining Choices with Personal and Global Values	“ah... yes naman... I think kasi, usually plant-based is more expensive than the usual offered meals, So parang if you're gonna buy plant-based it has to be good coz you're paying like extra like 20-50 pesos for that, for me.” -P2
		“Yes po, na knowing na sinusuportahan po ng brand yung sustainability, parang mas nagiging mas inclined po ako to support them (Yes, knowing that the brand supports sustainability, I become more inclined to support them).” -P14
Environmental & Ethical Values	Theme 4: Aligning Dining Choices with Personal and Global Values	“Uh for me yes, it does, because knowing that I am choosing something that's better for the planet, makes me feel good about my decision, so it gives me an extra reason to pick plant-based meals..” -P22
		No, as I said earlier, if its, if its good, I'll take it. The only problem I can see too my decision of purchasing is the price difference.” -P11

Table 5 highlights that participants also connect their dining preferences to personal ethics and social values. While sensory satisfaction comes first, once that expectation is met, students evaluate brands based on sustainability, transparency, and environmental responsibility.

These findings indicate that secondary factors grounded in personal values influence preferences once the sensory threshold is fulfilled. Cost emerged as a critical consideration. Participant 2 commented, “...if you are gonna buy plant-based, it has to be good coz you are paying like extra like 20-50 pesos for that” (P2), highlighting the impact of price on purchase decisions. This aligns with Perceived Value Theory (Zeithaml, 1988), which holds that consumers evaluate the benefits received against the costs incurred. Halicka et al. (2025) identify price, limited product availability, and a lack of information as barriers to sustainable diet adoption among Gen Z.

Beyond price, brand alignment with personal values, particularly sustainability, strongly influences acceptance. Participant 14 remarked, “na knowing na sinusuportahan po ng brand yung sustainability, parang mas nagiging mas inclined po ako to support them” (P14), illustrating how ethical branding enhances consumer loyalty. This supports Bulut et al.’s (2021) findings on environmental concern shaping purchase decisions and aligns with the green food consumption paradigm, in which consumer ethics and environmental awareness drive emerging-market behavior (Zimon et al., 2020, as cited in Waqas Mazhar, 2025). For these consumers, ethical brand practices contribute meaningfully to perceived value, tipping purchase decisions in favor of plant-based options. This reinforces the idea that with the concept of Generation Z’s purchase decision, they are perceived as a crucial driver in promoting sustainable consumption and minimizing the negative effects of food systems (Huambancho et al., 2022, as cited in Halicka et al., 2025), thereby contributing to environmental mitigation efforts. Still, some constituents of this demographic’s purchase decision remain unassociated with environmental concerns and ethical values but rather stem from taste and pricing. As P11 noted, “No, as I said earlier, if it’s, if it’s good, I’ll take it. The only problem I can see with my decision of purchasing is price differences”, reiterating the significance of sensory appeal and product quality in their purchase decision.

Participants consistently emphasized that taste remains the foremost criterion driving acceptance; any health benefits are secondary if flavor is sacrificed. This presents a critical challenge for restaurants considering plant-based menu items—they must ensure these options

are genuinely flavorful and competitively appealing to traditional meat dishes.

Once taste expectations are met, students perform a cost-value assessment that includes price sensitivity and brand ethics. For hospitality managers, this indicates that while superior taste is essential to gain entry into consumers’ consideration, sustaining loyalty may depend on transparent alignment with sustainability and ethical practices.

Underlying Motivations and Values

The third and final research question explored the deeper motivations and values that shape students' choices regarding plant-based menu options. The analysis revealed two powerful themes that drive these decisions: Theme 3: The Perceived Benefits and Hidden Drawbacks of Plant-Based Menu Options and Theme 4: Aligning Dining Choices with Personal and Global Values.

Table 6. Sensory Experience as the Ultimate Factor

Category	Theme	Significant Statement
Perceived Health & Wellness	Theme 3: The Perceived Benefits and Hidden Drawbacks of Plant-Based Menu Options	“Uh personally I feel more energetic and less sluggish when I eat more plant-based meals thank the meat meals.” -P22
		“Um bukod sa makakapag-prevent na nga siya ng mga diseases, metutulongan niya pa tayo maging mas healthy pa lalo (Aside from preventing diseases, it can also help us become even healthier).” -P15
		“Uhhh...Hindi sya naka-affect sa flavor and taste. Siguro sa akin lang sa sarili ko na mas pinipili ko yung mas healthy (Uhm.. It doesn't affect the flavor and taste. Maybe it's just me, I prefer what's healthier.

Table 6 revisits the tension between the perceived health advantages and nutritional skepticism of plant-based foods. Many participants reported choosing these items to feel lighter, more energetic, and disease-resistant, reflecting post-pandemic health awareness. Yet, some questioned whether processed plant-based alternatives actually achieve these outcomes.

Participants reported strong internal motivation focused on personal health. This motivation is grounded in tangible benefits, such as feeling “more energetic and less sluggish” (P22) and the potential to “prevent... diseases” (P15). These findings align with literature indicating increased health consciousness in the post-pandemic context (Hambardzumyan & Gevorgyan, 2021). Gonella et al. (2022) further explain that lifestyle changes triggered by COVID-19 have shifted eating patterns toward healthier choices, including greater intake of vegetables and fruits (Rawat et al., 2021). However, while plant-based products are generally regarded as “healthy” because of their amino acid profiles and other benefits, they may not be universally suitable for all individuals, mainly due to the ingredient composition of the product offered. This was reflected as one of the participants revealed that he has Glucose-6-Phosphate dehydrogenase (G6PD), in which he is cautious with other legumes, including soy, as it triggers symptoms. Soy has served as a major protein source in plant-based food composition due to its high-protein content (Penalver et al., 2025), but being one of the most common food allergens, it has affected its suitability for some individuals with soy allergies or sensitivity and influenced their preference over the ingredients utilized in the plant-based item offered at the establishment.

For some participants, health considerations outweigh taste preferences, as P10 noted, choosing plant-based options “regardless of taste,”

practices further contributes to consumer loyalty and decision-making.

In sum, this research confirms that Generation Z consumers approach plant-based dining with nuanced, critical perspectives that integrate sensory preferences, health outcomes, ethical values, and economic trade-offs. For hospitality managers, these insights emphasize the need to develop plant-based offerings that are not only flavorful and healthful but also ethically aligned, transparently marketed, and competitively priced.

Implication of the Study

The study provides practical implications for the Hospitality industry, particularly the food and beverage sector. As this study highlights, plant-based options are diverse, increasing accessibility and awareness of the menu offerings of plant-based options among Generation Z consumers. The findings underscore the need to improve sensory attributes – such as taste, texture, and visual – through culinary innovation to not only satisfy nutritional aspects but also the sensory expectation. Considering Generation Z awareness is significantly influenced by digital presence, the food and beverages sector should strengthen its presence in digital media spaces to promote the benefits of its plant-based offerings. Furthermore, this should be complemented by in-store strategies – including clear labeling, knowledgeable staff, and sampling opportunities- to increase visibility and awareness of plant-based options. Additionally, sourcing local ingredients ensures freshness and authenticity but also supports local farmers and the agriculture sector. Encouraging sustainable food systems. Finally, educational initiatives related to plant-based options should be systematically incorporated into health and hospitality curricula to enhance evidence-based awareness and informed decision making. To sum up, the study reinforces a dual-strategy for the hospitality industry in promoting plant-based food consumption among Gen Z through improving sensory satisfaction and expanding awareness facilitated by digital media with credibility, accessibility, and experience-based advertising campaigns.

Recommendations for Future Research

Future studies could expand the scope beyond urban university students to include diverse demographics, such as rural populations, different age groups, and socio-economic backgrounds. It is also recommended to extend the scope of investigation to food and beverage establishments, such as cafes and other restaurants that offer plant-based menu options, to capture broader perspectives on plant-based food acceptance. Longitudinal research would also be valuable to assess changes in attitudes and consumption patterns over time as plant-based options become more mainstream.

Additionally, experimental designs testing specific sensory modifications or marketing approaches could provide actionable insights for product development and promotion. Exploring cross-cultural comparisons could further elucidate how cultural norms influence plant-based food adoption globally. In addition, integrating the food concept of plant-based foods into educational curricula, particularly within food-related programs such as Hospitality Management, Nutrition and Dietetics, and Food Technology. Such studies could determine how academic exposure and structured learning influence students' awareness, attitudes, and competencies on plant-based products.

Furthermore, future studies that examine the environmental impact awareness and actual behavioral sustainability practices among Gen Z consumers in relation to plant-based diets would deepen the understanding of value-driven consumption. Thus, future studies should explore the influence of social media influencers and peer networks in

shaping perceptions and preferences toward plant-based food choices.

Generation Z represents the most active social media users and was born in the digital era. Finally, employing a mixed method approach is recommended to effectively triangulate qualitative insights with quantitative data, therefore providing a more holistic and evidence-based understanding of plant-based food acceptance and behavior.

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EXECUTIVE-LEGISLATIVE RELATIONSHIP IN SOGIE EQUALITY BILL: CONTENT ANALYSIS OF PUBLIC SPEECHES OF ESTRADA TO DUTERTE (2000- 2022)

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ABSTRACT

For over two decades, the Sexual Orientation, Gender Identity, and Expression or SOGIE Equality Bill has remained pending in the Philippine Congress despite repeated reintroductions and growing advocacy. This paper provides how public speeches made by Philippine Presidents during the time period between 2000 and 2022 influenced the political development of the SOGIE Equality Bill. This paper showed how presidential speeches reflect executive stances on the bill and how this shapes or mirrors the dynamics between the executive and legislative branches. This research employs Language and Power proposed by Fairclough (1989). The study utilized a content analysis to accommodate the manifest and latent analysis in exploring how language employed by Philippine Presidents shapes gender inclusivity within the context of public speeches on the SOGIE Equality Bill. The result of the study shows that the presidential speeches affect the political fate of the SOGIE Equality bill in the Philippines.

Keywords: *SOGIE Equality Bill, Power, Language, Speeches, President, Executive-Legislative*

INTRODUCTION

The SOGIE Equality Bill, which seeks to uphold the rights of individuals regardless of sexual orientation, gender identity, or expression, has been in the legislative limbo for about 20 years now. Since its passing, the SOGIE Equality Bill has experienced continuous reintroductions yet has failed to pass, thus the reason to create a movement to know in which political leaders, especially presidents, publicly articulate their positions and frame issues through political discourse.

Language and Politics have long been interconnected to political leaders to lay down their platforms, goals and objectives, interviews, and most especially speeches. Distinct scholars such as Fairclough (2001) emphasize that the language and power functions to maintain and change the power relations in contemporary society where analysis of language can reveal processes and how the involved parties are more able to resist and change them.

The construction of political power depends heavily on language, yet it must be recognized that political power struggles happen across diverse social fields which are never neutral (Bourdieu, 1991). The way political discourse forms depends on the cultural systems underlying these dialogues including those related to identity, representation, and social hierarchy. Among these, gender emerges as a particularly salient factor—one that not only influences who has access to a political voice, but also governs how that voice is expressed, perceived, and evaluated. Gender as a key social factor influences both access to political voice and shapes expression of political discourse so it is perceived and evaluated by others. Political communication functions at various levels because it requires more than just content delivery and persuasion skills because it involves performing identities while establishing social validation through gendered perspectives and which commands power. Thus, Lazar (2005) argues that to fully interrogate the workings of political discourse, it becomes necessary to examine how gendered norms and expectations subtly inform both the production and reception of political language.

Calonge and Talili (2016) argued that during the State of the Nation Address in the Philippines, the audience forms impressions based on the political speech, which is designed to be strong and persuasive. Dumire (2005), as cited in Calonge and Talili (2016), stated that the President's address plays a crucial role in shaping the conceptual, linguistic, and political changes that occur as a result of significant preceding events. Distinct political and social science fields interpret and express gender concepts in different ways. Social norms of a specific community establish gender-related values and behavioral standards which determine interaction methods between individuals (Rahmi, 2015). Language as a key component of culture and social structure significantly influences the development of identity as individual and social consciousness (Phuong & Dung, n.d.). The study of language and gender has increasingly become the study of discourse and gender. While linguistic patterns, rhetorical strategies, and discursive practices employed by political leaders in the Philippine, experts have explored political speeches by various leaders to fully understand what ideological features and efficient tactical approaches exist within those speeches (Almahasees & Mahmoud, 2022; Bulusan, 2022; Rahmi, 2015).

The main objective of this study is to analyze each President's view on the SOGIE Equality Bill, from its introduction in 2000 to 2022, as reflected in their public speeches during their respective administrations. It also aims to examine how the trends in their statements relate to the country's politics, historical context, and the continued non-passage of the Bill. Lastly, the study seeks to determine how executive-legislative relations influence one another through the President's public remarks on the SOGIE Equality Bill.

In this opus, the researcher seeks to answer the following: (1) How have the public political speeches of Philippine Presidents from 2000 to 2022 reflected their views on the SOGIE Equality Bill, and how do these views relate to the broader historical and political contexts behind its continued non-passage? (2) How have the political pronouncements of the presidency shaped executive-legislative relations, particularly in relation to the Bill? Hence, this study aims to understand how gendered language in political discourse becomes a tool for shaping public perception and for either reinforcing or resisting

political agendas that influence the fate of the SOGIE Equality Bill and the protection of the community regardless of their SOGIE.

Literature Review

In contemporary society, the language used during political discourse actively modifies how people understand both gender-related concepts and how language intersects to political agenda (Khalida et al., 2013c). Within the context of the Philippines, the question arises regarding whether linguistic and ideological acceptance found in common spaces extends into political leadership as well. By examining the executive-legislative dynamic and the persistent challenges surrounding the passage of the SOGIE Equality Bill, this review demonstrates how discourse not only mirrors political structures but actively shapes them. Through the intersection of language, gender, and power, this review aims to uncover how political leaders, particularly Philippine presidents, use language as both a performative and persuasive tool in governance and nation-building.

In the study of Kulo (2022), analysis of language that includes observation of its complete functions and variations enables better understanding of how language affects perceptions, convictions, and identities. Political language serves as an instrument of power which arranges how both minds and opinions shape. This instrument functions as a tool which allows society management. Any societal environment uses political speech to create and sustain social bonds as well as convey emotions and market political concepts and governmental plans (Dylgeri, 2017).

Executive-Legislative Relationship

Legislative-executive relations describe the structures and processes that shape how the legislative and executive branches of a democratic government interact with each other (Cheibub & Limongi, 2014). Within the framework of the 1987 Constitution the three branches of the government exercise different authorities and are subject to the checks from other parts of government. Legislative authority resides in a Congress that unites the Senate with the House of Representatives to generate and craft a law. The executive department represented through the president holds responsibility to execute and enforce legislative laws. It is commonly recognized that Congress is most likely to consider the president's opinions or reactions when deciding what bills to bring up for discussion (Kiewiet & McCubbins, 1985; Mouw & Mackuen, 1992). Given the nature of the political power formally granted to him by the constitution, the people's longstanding tendency to admire the strong authority of the leadership experience, and the functioning of the patron-client relationship that was influential in Philippine politics, it has been abundantly evident that the Chief Executive has a significant impact on national decision-making (Aguilar, 1989).

The power of the presidential decrees is one of the main instruments towards such an endeavor- it is a way whereby, through the process of negotiation and compromise, the executive can influence the creation of a legislative majority that would support the policies they want to see into law (Cheibub & Limongi, 2011). Decrees are intended to serve as a tool for the executive to influence the legislative agenda. Through this mechanism, the government may appeal to a legislative majority, which it may need if it wants the policies formulated through the decree to be translated into law. Therefore, the problem does not lie in Congress's delegation of legislative power or in the president's encroachment on it. Instead, the question is: in what way does the president implement decrees to create a legislative majority while simultaneously following the legislative agenda? According to the institutional hypothesis, the role of decrees is twofold: they help manage routine issues and function as traditionally accepted instruments of negotiation and bargaining within the legislative process. The fact that they do not implicate usurpation or delegation does not necessarily mean that they do not change with the political

circumstances that include the legislative authority of the president, his capacity to maintain his coalition as well as his popularity. Some of these conditional factors like macroeconomic pressures that result in emergency stabilization plans exist, but it is within the framework that it is only by decree that presidents can achieve the speed, secrecy, and surprise that is deemed to be critical to the success of policy (Cheibub & Limongi, 2011).

During all historical periods, the Philippine president has been seen as possessing superior influence over Congress both through constitutional authorities, organizational and political capabilities (Romani, 1957). Historically, the Philippine president has shown dominance despite the constitutional requirement for executive, legislative and judicial branches to have separate powers. The Philippine nation evolved into a democratic form since Aguinaldo and Quezon wielded executive dominance when facing extraordinary circumstances during their respective leadership terms. Through assertive leadership techniques both presidents created an enduring presidential legacy which presented the office as a substantial center of power thus continuing this tradition in subsequent administrations (Rebudilla, 2006). According to Appalo (1981), cultural traditions function as one reason which makes the Philippine president a position of great power in the country. People in the Philippines learn to view their government as a body containing multiple functional components with the president emerging as the ultimate leader. The word "pangulo" which means "head" refers to a person serving as a leader of others because Filipinos believe one individual needs to guide the whole group.

Strong leaders consistently gain power because Filipinos maintain a belief that always places one "head" in charge regardless of current leadership or historical period. This belief in a central, powerful leader is further supported by political practices, such as the use of pork barrel funds to secure loyalty from lawmakers. Political strategies that employ pork barrel funds work as evidence to reinforce the belief that a central leader stands as the most powerful element in the country. The president may have utilized pork barrel funds throughout Philippine political history to strengthen support for their agendas which has increased their dominance within the system. The combination of cultural expectations together with political strategies makes the president obtain a powerful role in the nation. For instance, Ex-President Manuel Roxas successfully obtained support for the Bell Trade Act from legislators through the 1940s use of these funds (Clinton, 2007).

Philippine Presidents from 2000-2022 (Estrada to Duterte)

From 2000 to 2022, Philippine presidency was embedded in a context where the pace of achieving legal advancements in gender and LGBTQ+ rights was often being surpassed by weak uptake of laws and application. During the early 21st century, traditional governments began to respond to the pressure from marginalized sectors such as women and people identifying as LGBTQ+. From the words of Hart (1987) he explains that giving some explanation to an action or a decision can be used as a face-saving tool especially when the action or decision under question is facing the scrutiny of the masses or of certain groups in the society. This plan can be seen in presidential speeches which according to Hart (1987) are termed as commodities which are used to shape and keep the president in line. Such speeches are able to legitimize unpopular policies, emphasize positive points of the leadership of the president, discredit political adversaries by demonstrating them as being on the other end of the political spectrum, and appeal to the undecided or ambivalent citizens side to the government.

Similar to the other presidential speeches, the State of the Nation Address (SONA) can serve as a tactical platform for carrying out such image-management activities. It gives a chance to recover or improve the image of a presidency that has undergone continuous criticism. This period spanned the leaderships of Joseph Ejercito Estrada, Gloria Macapagal-Arroyo, Benigno Aquino III, and Rodrigo Duterte. In the period of leadership by Estrada (1998–2001), characterized by a short tenure, the patriarchal expectations with an emphasis of public assertiveness, received a dominant emphasis with the government paying little attention to gender inequality issues from a structural perspective in. In the analysis of the speeches of Joseph Estrada, there are two prominent changes that seem to have influenced his political speeches. The collapse of the Cold War has caused drastic changes in the socio-political sphere of the 1990s. Second, the Asian financial crisis of 1997 added to the instability of the country and economic insecurity. As the Iron Curtain lowered the specter of communism slowly became a matter of national discourse, Muslims began to be viewed as a conflict zone of national security with insurgency becoming a regional question or Mindanao question (Hedman, 2001). In this context, the peace and unity calls made on this situation by Estrada were often rampant with references to crime and lawlessness in Mindanao. In addition to this localization, the members of drug trafficking and smuggling were also depicted as ethical adversaries of the social order (Fernan, 2025).

Years later, Gloria Macapagal-Arroyo, the nation's first female vice president, became president after Joseph Estrada was compelled to resign because of corruption and plunder accusations. Macapagal-Arroyo had an outstanding academic and administrative history when she began her political career in 1987. The speeches that Arroyo gave were marked by the high use of technical vocabulary, and long and declarative sentence structures, which according to Gonzalez (1998) is a characteristic of the elite English language of governance in the Philippines, which serves to strengthen the position of authority, not to give the President a wider public reach. Her State of the Nation Addresses represented the situation of top-down communication style, which was aimed at the institutional audience and not at the larger population of citizenry.

The linguistic pattern allows considering the explanations of why the rhetoric of Gloria Macapagal-Arroyo can be revisited to explain its indirect applicability to the SOGIE Equality Bill. Even though her speeches did not touch directly on the bill, her administration enactment of the Magna Carta of Women (Republic Act No. 9710) and her official, policy-oriented discourse indicates a larger institutional adherence to gender equality. The analysis of rhetorical and policy indicators will help the section to get past the biography and align better the communication style and governance priorities of Arroyo with the historical and political context of the ongoing inability to pass the bill (Ancho, I.V., 2020).

After a female president, Decades later, Benigno Aquino III became the president after the presidency of Gloria Macapagal Arroyo, and there was a rhetorical change to simplicity and relatability to the people. The speeches of Aquino were marked with narratives, the use of Filipino allusions, simplified explanations, and a break with a tradition of elite and technocratic speech. According to Ilie (2017) and Reppen (2010), these changes are indicative of the democratic requirements of openness and availability to enable the leaders to communicate a sense of transparency and reach wider audiences.

This rhetoric change can be discussed with references to the political situation of his administration. A report by a coalition delivered by the 106th Session of the Human Rights Committee (2012) noted that there were still challenges in getting governmental and political backing of

LGBT recognition and rights. The changes in policies at this time, such as the not including the LGBT protections under the Reproductive Health Law of 2011, and the arguments around the issue of legal recognition of transgender and intersex people, become examples of interactions between inclusive language and institutional practice. By taking note of these rhetorical and policy processes, the section will be able to leave behind and get a better sense of how the communication style of Aquino can be fitted into the historical and political environment that has contributed to the ongoing legislative stagnation around LGBT rights initiatives.

Lastly, Rodrigo Duterte took over the presidency and brought an unprecedented kind of linguistic populism which changed the color of presidential rhetoric. His code-switching, profanity and colloquial expressions went against the traditional ways of how a president should be seen and created a perception of accessibility and anti-elitism. According to Tannen (2007), this style is equivalent to the concept of linguistic intimacy, where language reflects the daily dialogue to build mass connection, and Cruz and Bacarro (2021) mention that Duterte used language as a method of emotionally disarming the audience and asserting his status as an outsider against political elites.

This tone of rhetoric can be discussed to correspond to the political processes of his administration. Even though Duterte sometimes presented himself as rhetorically open, such as by making personal comments on sexual identity, policy choices and executive actions included in the list of concerns among LGBTQIA+ activists. The U.S. Marine Joseph Scott Pemberton released on presidential pardon following his conviction in the murder of transgender Filipina Jennifer Laude (Nault, 2021) was also largely perceived as harmful to the rights of LGBTQIA+. It was in the same period that the SOGIE Equality Bill was pending docking since the President refused to certify it as urgent and legislative opposition continued, with Vicente Sotto III and other senators voting against the bill citing that it would confer special rights (Ranada, 2019). Such developments demonstrate the constraints of executive rhetoric without the legislative backing and describe the intersection of discourse, policy actions, and institutional constraints. Opponents in the Senate see it as providing unfair "special rights" and insist it should guarantee equal rights. Because the upper chamber did not agree, it was obvious that the executive cannot achieve much without the formal approval of lawmakers (Philippine News Agency, 2019).

The Intersection of Language and Politics

At the very core of political systems is the multifaceted relationship between language and power, where political speech serves as a means of constructing, contesting, and preserving power in addition to being a tool for communication. The intersection between language and politics is a dynamic arena where ideologies, social structures, and cultural norms are constantly challenged and recreated. It is much more than a transactional exchange of information (Lemke, 2005).

In exploring the intersection between Language and socio-political conflict, scholars emphasize the often-overlooked yet critical role of language in issues of security, democratic participation, and identity politics (Kitenge & Lahiri, 2022; Kruse & Willumsen, 2020; Medda-Windischer & Carlà, 2022). A key contribution to this area highlights the complexity of language dynamics in conflict-prone regions, drawing attention to how language policies and legislation can serve as instruments that either mitigate or exacerbate social tensions. Also, the language system functions to create reality more than it reflects what already exists. Political leaders use language as their main tool to showcase their dominance and grant support to various ideologies and shape collective public understanding (Jones, 2017).

According to Fairclough (2001), language exists inside power structures which sustain social and political control. While political leaders use language during presidential speeches, seminars, interviews, language acts as a political instrument which helps presidents both claim leadership positions and show national beliefs and influence that affects the perceptions of the public (Geil, 2012). Presidents employ strategic language choices to position essential values such as family, morality, and national identity both as foundational principles and fundamental governance structures (Geis, 2012; Wood, 2007; Hart et al., 2013). The approach presidents take in presenting information takes special importance while engaging in significant issues such as gender equality and LGBTQ+ rights. The political language used in these settings brings out ideological issues about social justice while showing positions regarding minority recognition and state protection for marginal groups. Through presidential language, the nation's discussion takes direction while policy directions get shaped and deliver policy positions and they employ it as a performance tool to maintain power (Edwards et al., 2024).

Public Speeches

Public speeches, especially the Presidential addresses, play a crucial part in influencing national conversation and public opinion (Hoggan & Aloni, 2020). This notion, as Fairclough (2001) provides, serves as a concrete example of public speeches made by politicians during argumentation alongside reasoning and assertion. The speakers use their assertions to sustain their power while implementing rules and spreading their political positions to the public. Hence, public speeches by politicians achieve power by serving their perspectives to the general audience. Through their speeches politicians express their political targets (Medhurst, 2010).

Speech as discussed by Austin (1962) provides three performative utterances and the concepts on locutionary, illocutionary and perlocutionary acts which then he called Speech Act theory. The performance of an utterance is known as a locutionary act. It discusses the phrase itself as well as its apparent meaning. On the other hand, the illocutionary act is the act of stating anything. Lastly, perlocutionary acts are speech acts that influence the listener's or speaker's emotions, ideas, or behavior. To put it another way, they try to influence people's opinions, for example, by intimidating, informing, inspiring, persuading, or compelling them to do or realize anything, whether that is their intention or not (Austin, 1962).

The President of the Philippines delivers the State of the Nation Address (SONA) which serves as a constitutional requirement for them to assess national conditions and review government achievements from the past year, while presenting their plans for the upcoming year. The SONA functions as a tool which enables the executive branch to demonstrate its accountability to the nation (Navera, 2006). The research conducted by Navera (2011) about Gloria Arroyo's SONA reveals that presidential speeches use metaphors and strategic methods to capture audience interest. This directs their attention toward specific topics. Presidential addresses may provide cues or signals to specific government agencies to help the executive branch accomplish its mandate, develop initiatives, and provide fundamental services to the public (Eshbaugh-Soha, 2010a, 2010b). As a result, they can also strengthen the relationships between the head of the executive branch and the government's legislative and judicial institutions. This shows that these indicators have the ability to define the public agenda; thus, the head of the executive department may utilize them to advance the administration's most valued objectives. Aside from that, according to Schaefer (1997), these public speeches may be used to address the president's legislative goals, and urge the relevant organizations to act on the suggested policies such as the SOGIE Equality Bill.

Gendered Language and its Power

Language is a reflection of social structures, and one of the most ubiquitous forces in its gender (Talbot, 2019). Gendered language is the manner in which language use represents, reinforces, or resists social norms, expectations, and hierarchies about gender (Eckert et al., 2013; Jones, 2016; McConnell-Ginet & Eckert, 2003). In political language, gendered language not only conveys policy but also performs identity work, legitimates authority, and affects the reception of leaders and their messages by the public (McConnell-Ginet & Eckert, 2003). This has far-reaching implications for the construction of gender and sexuality in public debate, for instance, over the SOGIE Equality Bill in the Philippines.

Philippine presidents developed gender-specific leadership identities which mirror common social norms and cultural notions of the country (Vijayarasa, 2022). The performance creates political influence on leadership evaluation because it determines how public officials get measured for their authority and established legitimacy. For instance, former President Rodrigo Duterte used his rhetorical strength to highlight hyper masculine qualities through decisive leadership and strong authority and toughness which established his presence as an assertive political leader (Encinas, 2024). His casual spoken style with provocative elements such as humor, swear words, and gendered-language descriptions served as a political method to distinguish himself from more traditional elites and establish connections with particular voters. While such discourse appealed to populist sensibilities, it also reflected and reinforced broader patriarchal norms embedded in the nation's political culture (Duran, 2023).

As contested by Karpowitz and Mendelberg (2016), a woman's presentation in political settings depends on established institutional communication norms as well as organizational patterns of interpersonal interactions specific within the institutions they are part of. This is influenced by both rules of procedure and the number of women in the group. Chappell and Waylen (2013) argue that formal political institutions demonstrate gendered organizational character because their procedural rules and informal practices prefer male dominant approaches to communication and decision making. These norms affect not only who speaks and how often, but also how speech is perceived. Gender-sensitive aspects such as reproductive health policies and sexual rights and discrimination laws experience tangible legislative impacts because of this influence.

Political Fate of SOGIE Equality Bill

Sexual Orientation, Gender Identity, and Expression or known as SOGIE Equality Bill has been introduced in the Philippines as a legal solution to stop discriminatory practices, especially based on gender identity and sexual orientation (Tajan et al., 2023, p. 41). While the escalation of gender-based offenses along with workplace and educational stigmas, it leads to suicidal thoughts and attempts together with bullying cases and sexual assaults (Human Rights Watch, 2017, pp. 15–25).

The SOGIE Equality bill has been in the Congress for about two decades (2001-present) from the presidency of Joseph Estrada (1998-2001), Gloria Macapagal-Arroyo (2001-2010), Benigno "Noynoy" Aquino III (2010–2016), and Rodrigo Duterte (2016–2022) and present term, Ferdinand Marcos Jr. The legislation, intended to safeguard the rights of LGBT individuals, was initially proposed in 2000 and has since been reintroduced in the 19th Congress, ranking it among the longest-discussed bills in the Philippines (Ildelfonso, 2024).

The LGBTQIA+ acceptance index score of 2017-2020 of the country shows that the country is ranked 36th out of 175 countries in Asia and, in particular, in the Philippines (Flores, 2021). Enactment of the first

SOGIE Equality Bill is still a challenge to the country since versions of the bill have been presented in every national legislative session since the 13th congress in 2004, up to the 19th congress in 2022, but none has succeeded in being passed into law.

The language that political leaders, particularly presidents, use constitutes a powerful symbolic tool that also performs meaningful actions. The actual terms used in political language perform more than simply describing functions because they fundamentally construct shared meaning as well as identity representations and authoritativeness. According to Fairclough (1995) and Lazar (2005), power relations emerge through discourse and get challenged at this point of interaction. The Philippine presidential rhetoric maintains a fundamental position in national value definition as it sets government policy directions and establishes social issue legitimacy including gender and sexual orientation matters (Graneheim et al., 2017).

Theoretical Framework

The Research made use of the Language and Power postulated by Fairclough (1989). The Manifest and Latent Analysis was specifically used in this research. Manifest content in the text analysis should be described, and latent content should be interpreted in qualitative analysis. The manifest and the latent content require interpretation; however, the interpretations may vary in terms of the level of depth and degree of abstraction, and a high level of abstraction must not be confused with a high level of interpretation (Graneheim et al., 2017). Several Scholarly works have effectively utilized this framework to analyze the work of media communication, social movements, and political dynamics. For instance, Enemou (2023) utilized Fairclough's three-dimensional framework to evaluate Nigerian political campaign speeches through an analysis of how candidates employed Nigerian Pidgin and strategic language to engage with voters. Analyzing the parts of their speech showed that they contained persuasive texts together with self-promotion and criticisms towards past administrations. The political performance was influenced by how speakers in political discourse utilized pronouns such as “we” and “I” to promote their beliefs while building collective identity showing how discourse can shape public perception and influence political performance.

METHODS

In this opus, the study utilized a content analysis to accommodate the manifest and latent analysis in exploring how language employed by Philippine Presidents (2020-2022) shapes gender inclusivity within the context of public speeches on the SOGIE Equality Bill. This research analyzed different kinds of public speeches such as State of the Nation Address, speeches accessed through online databases, official government websites, and verified digital media repositories via reputable media outlets such government archives, or official channels (e.g. Presidential Communication Outlets, ABS-CBN News, GMA News). In order to ensure relevance, depth, and alignment with the study's focus on gender and LGBTQ+ issues, the researcher created a criteria for specific information needed. These criteria are intended to guide the identification of speeches that not only reflect public discourse but also effectively contribute to discussions on women's rights, gender equality, and LGBTQ+ advocacy.

Table 1. Researcher made Criteria for Selecting Speeches

Criteria for Selecting Speeches	
Nature of Speech	-A formal public address meant for a large audience is required for the speech. -It should highlight important issues pertaining to women's rights, LGBTQ+ rights, gender equality, social inclusion, or other public issues impacting these groups.
Type of Speech	-State of the Nation Address -Speeches spoken in official government functions -Speeches with available video feed or transcript.
Language and Accessibility	-It must be available via reputable media outlets, government archives, or official channels (e.g. Presidential Communication Outlets, ABS-CBN News, GMA News) -The researcher must be able to understand the language used to deliver the speech, such as English or a reliable translation.
Tone and Frequency	-To comprehend the rhetorical attitude, the tone of these references—such as supportive, critical, neutral, or dismissive—will be taken into account. -To ascertain if these concerns are emphasized or marginalized in the discourse, the frequency and depth of mentions will also be evaluated.

This paper analyzed the select Presidents from the time that the SOGIE Equality bill was introduced specifically from Joseph Estrada (1998-2001), Gloria Macapagal-Arroyo (2001-2010), Benigno “Noynoy” Aquino III (2010–2016) to Rodrigo Duterte (2016–2022). Although the bill is still in the senate in the current 19th congress, The administration of President Ferdinand Marcos Jr. is not included in this analysis, as his term is still ongoing and available data remains limited. Below is the profile of select Philippine Presidents.

Table 2. Profile of the Selected Philippine Presidents

Select Philippine President	Immediate Platform	Years of Service
Joseph Estrada	Pro-poor (Claudio, L. E., 2014)	2 Years and 6 Months (June 30, 1998, to January 20, 2001)
Gloria Macapagal Arroyo	Economic Growth (Sicat G. P., 2001)	9 Years and 6 Months (January 20, 2001 – June 30, 2010)
Benigno “Noynoy” Aquino	Anti-corruption (Quimpo, N. G.M 2013)	6 Years (June 30, 2010 – June 30, 2016)
Rodrigo Roa Duterte	Combating Drug Trade (Ravanilla, et. al., 2021)	6 Years (June 30, 2016 – June 30, 2022)

As previously mentioned, the speeches covered by this study were qualitatively selected from the publicly available transcripts of the pronouncements of the Chief Executive, especially those delivered in a public forum. Those which were delivered in a private setting, inaccessible transcripts, no transcripts or video data at all, and those which were done on the President's personal discretion (e.g. birthday greetings, conversations, verbal reactions) were not included in this study. Furthermore, the researcher had used the aforementioned criteria (Table 1) as the basis of choosing the speeches. Lastly, no second coder was employed but the analysis was validated by language and gender experts employed by the researcher.

The researcher focused on the Philippines as it serves as an example that blends traditional gender customs with political activities which frequently combine religious values with conservative beliefs (Bonifacio, 2018). For deep analysis, the results are validated by accredited scholars such as professional linguist, researchers, and especially political scientists to present a better understanding of how gendered language operates in high-level political discourse, and how it may shape executive-legislative outcomes related to gender rights, particularly the passage—or persistent deferral—of the SOGIE Equality Bill in the Philippines.

After the data gathering phase, the researcher went through the digital file to check each material based on a researcher-made codebook,

which was validated by the Letran Research and Publication Department. The codebook/research instrument consists of two overarching variables, with one to two sub-variables, and seven indicators in an interrogative yes or no format. It also includes the tone of the speech and frequency of the specific words mentioned. These variables, sub variables, and indicators came from the study of the researcher. The analysis of data was done through digital means and tools (Google Sheets, Google Drive, Google Docs) for convenience and uniformity.

Below is the validated codebook that the researchers used in this paper:

Table 3. Researcher Codebook

Main Variable	Sub-Variable	Indicators	Interrogative Form	Tone	Frequency
Executive-Legislative Relationship	Stance Alignment	Presence of alignment of Executive-legislative	Is there a presence of alignment of Executive-Legislative relationship in the speeches of the presidents?	Positive / Negative / Neutral	Count of stance mentions
		Presence of explicit urging	Do the Presidents in their speeches explicitly urge to act on the SOGIE Bill?	Positive / Negative / Neutral	Count of explicit urging mentions
		Use of stance reference	Do the speeches of the presidents include some gender equality references? (e.g., Everyone, regardless of their SOGIE)	Positive / Negative / Neutral	Count of stance references mentions
LGBTQ+/SOGIE Representations in Speeches	Inclusivity of Language	Use of Gendered terms	Does the President use gendered terms in the speech (e.g., chairperson instead of chairman)	Positive / Negative / Neutral	Count of gendered terms mentions
		Use of Inclusive language	Does the President use inclusive language in the speech (e.g., "everyone," "all Filipinos," "they" instead of "he")	Positive / Negative / Neutral	Count of inclusive language mentions
	Visibility of the representations	Manifestation of Equal rights and Equality	Are the rights framed accordingly from passing the SOGIE Bill?	Positive / Negative / Neutral	Count of inclusive language mentions

FINDINGS

Using manifest and latent content analysis, the researchers analyzed how the public speeches affect the executive-legislative relationship in passing the SOGIE Equality Bill in the Philippines. With fifty related speeches of the Philippine presidential, the researcher gathered fifty related information to provide the analysis that would support the idea of non-passing of the bill in the relation of Executive-Legislative departments. In line with the earlier discussions, the Presidential Decree power represents one of the main instruments for doing this—it's a mechanism whereby through negotiation and bargaining the executive can lead the process of shaping a legislative majority in support of the policies like SOGIE Bill where it wishes to implement (Cheibub & Limongi, 2011).

In analyzing the data gathered through specific criteria and research instruments, Table 4 presents corresponding interpretations of each indicator. It also allows the researcher to navigate the tone of how the presidents deliver the speech and how frequently they mention certain scenarios in their speeches. Below is the summary of data collected in the form of Manifest content analysis.

Table 4. Summary of Manifest Content Analysis

Question	Indicator	Yes	No	Interpretation	Tone	Frequency
Is there a presence of alignment of Executive-Legislative relationship in the speeches of the presidents?	Presence of alignment of Executive-Legislative relationship	36	14	Most speeches show a strong alignment in Executive-Legislative relationship	Neutral	36 (I asked the congress., Thank you to Legislative Dept., Executive dept., is doing...)
Do the Presidents in their speeches explicitly urge to act on the SOGIE Bill?	Presence of explicit urging	0	50	None of the president's speeches explicitly urged action on the SOGIE Bill in their speeches.	Neutral	0
Do the speeches of the presidents include some gender equality references? (e.g., Everyone, regardless of their SOGIE)	Use of stance reference	16	34	Presidential speeches mention gender equality or SOGIE-related inclusivity.	Neutral	16 (We want to end the discrimination..)
Does the speeches include power-framing language (e.g., "Together, under my leadership, we will...")	Use of power-framing language	37	13	Majority of the presidents' speeches use power-framing language to assert leadership	Neutral	37 (With my leadership..., During my term..)

Does the President use gendered terms in the speech (e.g., chairperson instead of chairman)	Use of Gendered terms	28	22	Most presidential speeches still contain gendered terms	Neutral	41 (The chairperson of the congress...)
Does the President use inclusive language in the speech (e.g., "everyone," "all Filipinos," "they" instead of "he")?	Use of Inclusive language	32	18	Many presidential speeches employ inclusive language	Neutral	32 (We want to protect the Filipino People...)
Are the rights framed accordingly from passing the SOGIE Bill?	Manifestation of Equal rights and Equality	13	37	Speeches reflect the promotion of equal rights and equality in relation	Neutral	37 (We want to end the discrimination...)

Gender Inclusivity in Political Language

The study revealed that most presidential speeches demonstrate Presence of alignment of Executive-legislative relationship, as indicated by thirty-six out of fifty (36 out of 50) speeches showing references to cooperation and acknowledgment. This shows that from fifty speeches, thirty-six presidential speeches are able to mention and acknowledge the relationship between executive and legislative in passing a certain bill or can ask for help from each department.

"If the Executive proposes a reasonable budget, the dialogue with the members of Congress will go smoothly.." [23] (5th State of the Nation Address of Ex. Benigno "Noynoy" Aquino)

Conversely, the overall lack of an explicit urging call to pass the SOGIE Bill (0 Yes, 50 No) shows strong indication of a laggardice stance by the presidents when dealing directly with the politically sensitive and possibly divisive social matters. Although equality and inclusivity in general terms are often advocated by the president, his/her unresponsiveness to take action against legislation concerning SOGIE rights is a sign of conservatism that is based on the interplay of politics, religion, and the morality of the people. It has also been revealed that the number of speeches that have stance references that directly refer to gender equality or inclusivity is only sixteen (16), which indicates that though gender is one of the topics discussed by presidents, it is not yet a part of their political language. Although some presidential speeches still show direct support to gender equality which brings to the community a little light to pass the SOGIE Bill.

"We want to end the discrimination of persons on the basis of age, disability, ethnicity, sexual orientation and gender identity and expression, and other character traits." [38] (4th State of the Nation Address of Ex. President Rodrigo Duterte)

"Dapat maging daan sa tagumpay sa agribusiness ang reporma sa lupa. Done right, reform will democratize success, as Ramon Magsaysay and Diosdado Macapagal envisioned. We must reform agrarian reform so it can transform beneficiaries into agribusiness men and other agribusiness women. "

"Land reform should be the path to success in agribusiness. Done right, reform will democratize success, as Ramon Magsaysay and Diosdado Macapagal envisioned. We must reform agrarian reform so it can transform beneficiaries into agribusiness men and other agribusiness women." [13] (7th State of the Nation Address of Ex. President Gloria Macapagal Arroyo)

Power of Language

While there are words of equality coming from the presidential speeches, it is still evident that gender equality and passage of the SOGIE Bill in most of their speeches is not really their main focus during their term and the time they are crafting their speeches. Fifty speeches were analyzed and thirty-four (34) of them were not showing any gender equality or at least equality-related topics. Hence, the result of low frequency of gender related languages.

Meanwhile, among the fifty (50) speeches examined, thirty-seven (37) include power-framing language, whereas 13 do not feature it. This indicates that most of the presidents' speeches deliberately highlight authority and leadership using expressions like "With my leadership," "During my term," and "Under my administration." Consequently, the use of gendered terms in presidential speeches with (28 No, 22 Yes) (e.g. "business owner" instead of "businessman") indicates that the language of governance is still somewhat influenced by conventional gendered phrases. Despite a discernible push for inclusivity, evident in the rise of gender-neutral language, the ongoing use of gendered terminology indicates that political discourse remains inclined toward traditional, male-centric standards.

"We have come too far and made too many sacrifices to turn back now on fiscal reforms. Leadership is not about doing the first easy thing that comes to mind; it is about doing what is necessary, however hard." [14] (8th State of the Nation Address of Ex. President Gloria Macapagal Arroyo)

Hence, 50 speeches examined, 32 were identified as using inclusive language, whereas 18 did not somewhat utilize it. This suggests that most presidential speeches make an effort to employ language that reflects a sense of collective identity and inclusivity, utilizing phrases like "we," "our people," or "the Filipino people." Ultimately, concerning the last indicator, the data indicates that merely 13 speeches demonstrate a clear expression of equal rights and equality, whereas 37 do not. This indicates that the majority of presidential speeches do not clearly position equality in relation to the SOGIE Bill or the promotion of LGBTQ+ rights.

DISCUSSION

The results above align with Perdana et al., (2024), that the relationship enables them to move in the sphere of coalition politics and deal with different political forces. Such alliances are very important in influencing the decision-making and governance of the multiparty presidential systems, as witnessed in the case of both the Philippines and Indonesia. The existence of such a relationship is an indication of a political tactic whereby the presidents deliberately bring out an image of collective rule—a hallmark of Philippine political discourse aimed at maintaining public trust through rhetorical collaboration. Hence, such executive-legislative oversight increases accountability in the sense that individuals must work hard to ensure they implement gender-responsive policies and not as an add-on. Moreover, the fact that the clause puts a heavy emphasis on both the public and the private institutions is a guarantee wide-ranging coverage since it knows that gender inequity is

not just confined within government systems but also in the business entities, education, and even social organizations (Akla, 2025).

As Kena (2017) notes, this variety of methods for addressing the broader subject of language, gender, and sexuality has led to debates and disputes in recent decades, which persist today. These discussions ought to be seen as a strength in the field, as they ensure that significant topics concerning language and society remain in focus, even in the absence of agreement. The frequent use of these power-framing languages seeks to present themselves as the catalyst for shared advancement or national initiatives. This rhetorical approach seeks to build trust, instill assurance, and strengthen the president's primary position in leadership and national progress.

The study also suggests that gender awareness in formal discussions is developing but has not yet been completely incorporated into the communication methods of governance. These linguistic patterns may quietly sustain current gender hierarchies, presenting authority and leadership through terms linked to masculinity, while diminishing the prominence of women and those with diverse gender identities (Coates et al., 1998). These linguistic selections aim to cultivate unity and a sense of national identity, portraying the president as one with the populace instead of an authority speaking over them. Expressions such as "Our aim is to safeguard the Filipino people" exhibit a unifying tone that fosters collective accountability and involvement in nation-building (Manzano et al., 2020)

While certain presidents reference equality with phrases such as "We aim to eliminate discrimination," these comments are typically vague and general, emphasizing moral appeals instead of concrete policy measures. This framing suggests that while equal rights are symbolically recognized, they are not meaningfully linked to legislative actions such as the SOGIE Bill.

Table 5. Select Transcript of speeches

Select Presidents	Transcript of the Select Speeches
Joseph Estrada	"I want my people to enjoy peace, but only with freedom, I want my people to savor prosperity, but only with fairness, and I want my people to experience stability, but only with openness..." (<i>A Peace with Freedom speech from Estrada in New York, July 22, 2000</i>)[4]
Gloria Macapagal Arroyo	"The country needs peace to uplift the Filipino people and empower the communities..." (<i>Socialist International speech by Gloria Macapagal Arroyo ., n.d</i>)
Benigno Aquino	"Noynoy" "I particularly admire Japan's current thrust towards gender equality.." (<i>Benigno Aquino on joint session of the National Diet of Japan</i>)[34]
Rodrigo Duterte	"We want to end the discrimination of persons on the basis of age, disability, ethnicity, sexual orientation and gender identity and expression, and other character traits..."(<i>4th State of the Nation Address of Ex. President Rodrigo Duterte</i>)[38]

From table 5, Ex-President Estrada, Aquino, and Macapagal did not express the passage of the SOGIE Equality Bill aside from Rodrigo Duterte. However, it would have been more successful if Duterte had explicitly emphasized equality, empowerment, and fairness that should be translated into a tangible and consistent advocacy for the SOGIE Equality Bill—such as promoting inclusive rhetoric, institutionalized protections, and genuine representation. The lack of personal interaction with the SOGIE Bill is an indicator of the larger reluctance of the Philippine political leadership to address socially divisive but critical matters related to gender and sexuality (Maningo, 2024). Being rhetorically favorable towards justice and human rights, every administration tends to put forward the more politically safe agendas, and neglect those that question the customary norms or the religious sensitivities. It would be more effective in case these leaders employed their political statistics and moral authority to make the dialogue on

SOGIE become normal, not something to be discussed as controversial but an element of social justice and equality (Gamalinda et al., 2024). Through it, they would have assisted in creating a more enlightened and inclusive political culture, where diversity is accepted as power instead of a threat to moral or cultural virtues

These dynamics can be seen through the course of the SOGIE Equality Bill. The SOGIE bill has been resubmitted through successive congresses, but lack of uniform high-level executive support (including certification as urgent) has been identified by the advocacy groups and human-rights monitors as one of the reasons why the bill has continued to be stalled in committee and interpellation by opponents in either house. Meanwhile, when presidents (or their representatives) have publicly disavowed the bill—as by not referring to it in key political speeches or international conferences—that silence has given the effect of demonstrating to anti-SOGIE alliances in congress that it is barely costly politically to do so (De Guzman, 2023).

Comparative examples help to make the point. The Anti-Terrorism bill was forcefully hastened through and passed into law after the unanimous executive support and the quick passage by the congress, - such a good example of presidential will meeting enough congressional allies to overcome civil-society opposition. In comparison, even certified measures that were deemed urgent (e.g. some of the urges proposed by Duterte) were not passed since there was no consensus in the congress proving the weakness of certification as a single instrument (Gonzales, 2020). Other bills such as the Responsible Parenthood and Reproductive Health Act (RH Law) show that Congress is able to act without executive focus as well as the RH debate has had its share of active public debate and executive posture at different times, and the law was finally passed by Congress, showing that legislation initiative and coalition-building within Congress can yield results which are no longer solely dependent upon presidential priority (Sales, 2015). The combination of these cases indicates that presidential announcements determine the speed and allowable risk by lawmakers, however, the ultimate result lies in the committee dynamics, party control, mobilized constituencies, and elite bargaining

CONCLUSION

Putting everything into account, while there are some limitations on their presidential speeches, the non-passage of the SOGIE Bill instilled in the way they present their speeches. Presidential speech analysis comparing the years 2000-2022 shows that the SOGIE Equality Bill in the Philippines has taken more the form of rhetorical gestures than actual endorsement of the policy. Through the presidential speeches of Estrada, Arroyo, Aquino, and Duterte, they reflected views in the inclusivity and awareness of equality differently but barely touched the direct issue of the SOGIE Bill. Rather, in their speeches they presented generalized concepts of equality, unity, and development serving as rhetorical platforms, not directly addressing social issues like LGBTQ+ rights. Such a regular pattern indicates a kind of symbolic politics, in which the idea of inclusiveness is called upon to retain a modern, democratic image as well as being limited to avoid losing conservative advocates in the political and religious establishment. In historical perspective, this rhetoric silence falls in line with the overall history of legislation of gender and human rights in the Philippines. The same empowerment of women and gender mainstreaming achievements, as those of the Magna Carta of Women, were only made possible in the past when presidential rhetoric was equated with institutional practices and legislation. The SOGIE Equality Bill, on the contrary, is still pending passage since the debate by the government (the presidential) was at times sympathetic but lacked the symbolic and procedural force

necessary to advance the legislative process. The content analysis of the study revealed that the explicit mention of SOGIE issues is limited, and the use of gendered language is more frequently gender-neutral or traditional, which further emphasizes the persistence of the idea of the linguistic and cultural norms in assigning the name to the discourse of equality.

The paper also points out that the failure of the SOGIE Equality Bill to pass over the years could not be simply seen as a legislative failure but rather as a manifestation of the way executive language has traditionally maneuvered moral conservatism and institutional accommodation. Lack of solid presidential promotion like the bill being declared as urgent or clear instructions in the State of the Nation Addresses would reflect the political consideration of the Philippine presidents. By implication, the language of the executive indicates the convergence between words, power, and politics: what is not said in presidential speech is as political as what is said.

With all that being said, through manifest and latent content analysis, these results uncover a dual nature in presidential discourse: although inclusivity and equality are progressively recognized at the surface, the underlying aspects of political communication continue to be affected by executive-legislative relationships, guarded conservatism, and centralized power. Clearly, presidents convey unity and fairness by using neutral tones and inclusive appeals. Underlying the conversation, though, is a strategic silence concerning divisive topics such as the SOGIE Bill, exposing the persistent conflict between progressive values and political reality. This dynamic suggests that although the concept of equality has made its way into presidential language, its complete incorporation into governance discourse still depends on wider changes in political culture, institutional transparency, and societal willingness to accept gender equality.

This chart allows us to observe the apparent increase in the number of both indicators that could be answered with "yes" or with "no" which proves that the references to the themes related to gender equality have become more common in the presidential speeches. The trend is that the Presidents of the Philippines between 2000 and 2022 are becoming more prone to including the topic of gender, which indicates a changing degree of sensitivity to inclusiveness and social justice.

However, despite this rise in thematic mentions, the data also reveals a notable disconnect between rhetorical acknowledgment and concrete policy action. The fact that there is a gender-related language does not mean that the SOGIE Equality Bill is unambiguously advocated, nor that there is a will to advance the legislation. Rather, these sources are still mostly superficial or hidden under the umbra of general discourses of governance, development or social protection.

The disparity between rhetoric and legislative course highlights a broader dynamic in the relationship between the executive and legislative branches: even when the president gestures toward progressive principles in his or her speech, it does not translate into presidential influence, endorsement of sense of urgency and long-term political backing of congressional action. This somewhat leads to the growing references to the awareness of gender issues but does not go further than taking a definite and stable position about formalization of the SOGIE Equality Bill and the way in which political discourses can take into consideration the marginalized groups without undertaking structural modification.

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WEB-BASED POS SYSTEM AND INTEGRATED E-COMMERCE PLATFORM FOR HEALTHPAL MEDICAL AND DENTAL SUPPLIES TRADING

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ABSTRACT

HealthPal Medical and Dental Supplies, established in 2020 in Capas, Tarlac, transitioned from selling cleaning products to offering medical and dental supplies during the pandemic. The business faces challenges with manual inventory tracking, resulting in delays, errors, and incomplete records. Additionally, reliance on third-party platforms like Shopee complicates inventory management, while poor forecasting further hampers stock control, especially for perishable items. To address these issues, a web-based Point of Sale (POS) system with an integrated e-commerce platform was developed to streamline operations and provide essential business insights. The Rapid Application Development (RAD) methodology was employed to ensure fast development and alignment with client requirements. The system was built using MySQL for the database, PHP and JavaScript for programming, and deployed through Hostinger for web hosting. A total of 54 respondents evaluated the system using the ISO 25010 criteria, resulting in an overall mean score of 4.66, interpreted as excellent. The project successfully achieved its objective of digitizing HealthPal's key business processes. The new system enhanced inventory management, sales, purchasing, and POS operations—improving efficiency and minimizing errors through a user-friendly interface with role-based access.

Keywords: Point of Sale system, E-commerce, web-based, rapid application development model, MySQL, PHP, JavaScript, Hostinger

INTRODUCTION

Technology has significantly enhanced business efficiency, with systems like Point-of-Sale (POS), Enterprise Resource Planning (ERP), Supply Chain Management (SCM), and E-commerce automating tasks and streamlining data use. E-commerce enables companies and individuals to buy and sell products and services online, acting as a virtual storefront for businesses. POS systems are crucial for retail and restaurant operations, handling transactions, sales, inventory, customer service, and payment processing. Current trends show that POS systems are adopting cryptocurrencies, cloud-based platforms, and AI integration, while e-commerce is shifting toward voice search and seamless online transactions. Both systems are increasingly mobile, cashless, and user-friendly, indicating their growing importance for businesses and customers.

HealthPal Medical and Dental Supplies, founded in 2020 by Junzi Sibal in Capas, Tarlac, initially supplied cleaning and sanitation products but shifted to medical and dental supplies during the pandemic due to increased demand for hygiene solutions. The company offers over 200 products, including alcohol, hand sanitizers, thermometers, oxygen tanks, and oximeters. With a team of four, including the owner, the company orders products mainly from Shopee, especially for urgent needs, and delivers them within Tarlac and to neighboring areas like Pampanga. Transactions are handled through cash-on-delivery, walk-in payments, and company vehicles. The company relies on manual methods, using logbooks to track inventory and sales, without barcodes for their products, which leads to challenges in accurately managing the stocks.

The investigation revealed that HealthPal Medical and Dental Supplies faces significant challenges due to its reliance on manual methods for tracking inventory and transactions, alongside using Shopee as a third-party e-commerce platform. The company struggles with marketing, as their current platforms such as Shopee and Facebook are not enough, and the owner expressed a need for a customizable, user-friendly

independent platform. The manual processes result in inaccurate inventory tracking, as the company uses logbooks and an incomplete Excel file it leads to delays and miscounts, particularly with a growing product range. The owner noted that it takes 2-3 days to determine stock levels accurately. Moreover, poor product forecasting, especially for items with expiration dates, further complicates operations. These issues are common in businesses that rely on manual data entry, which is inefficient and error-prone, leading to stock discrepancies and inefficient workflows.

To address HealthPal's challenges, the researchers developed a solution by implementing a Point of Sale (POS) system integrated with an E-commerce website. This system will enable the company to efficiently track and manage its inventory, providing better control over product availability and operations.

Objective of the study

The researchers designed, developed, and implemented a comprehensive web-based POS system integrated with an E-commerce platform tailored specifically for HealthPal Medical and Dental Supplies Trading. This innovative system was created to streamline and enhance the company's day-to-day operations, improve the efficiency of transaction processing, and support inventory management. Additionally, the integration with an E-commerce platform expanded the company's reach, enabling online sales and improving customer accessibility to their products and services.

The system was built using PHP as the primary programming language for backend development, with JavaScript employed to enhance interactivity and responsiveness on the client side. MySQL was used for managing the database, ensuring secure and efficient storage and retrieval of transactional and inventory data. Hostinger served as the web hosting provider, offering reliable deployment and accessibility of

the system. To further enhance functionality, QuaggaJS, a JavaScript-based barcode scanning library, was integrated to enable real-time barcode reading for inventory and point-of-sale operations.

By incorporating inventory and sales management features, the system also provided valuable insights into business performance, aiding in data-driven decision-making and supporting the company's growth and operational goals.

Scope and Delimitation of the Study

This study focuses on the design, development, and implementation of a web-based Point of Sale (POS) system integrated with an E-commerce platform tailored for HealthPal Medical and Dental Supplies Trading, located in Capas, Tarlac. The system aims to replace the company's traditional manual process of inventory and sales tracking—which relied heavily on paper-based recording and third-party applications for online selling—with a centralized, automated digital solution. By introducing this integrated system, the researchers seek to streamline business operations, reduce human errors, improve transaction efficiency, and provide a more seamless customer experience both in-store and online.

To ensure the system's timely and effective development, the Rapid Application Development (RAD) methodology was employed. This approach allowed the researchers to deliver functional components quickly while actively incorporating feedback and requirements from the client. The system includes key modules for both the admin and customer sides. On the admin side, modules include Sales Reporting (daily, weekly, and monthly reports with dynamic visualizations), Inventory Management (with real-time stock tracking and low-stock alerts), Product Catalog (linked with the E-commerce platform), Customer Relationship Management (CRM), Customer Purchase History, Order and Purchase Management (including supplier coordination and stock movement tracking), After-Sales Service, and a fully functional POS interface. The POS supports real-time barcode scanning using QuaggaJS, enabling use of standard device cameras rather than specialized hardware.

On the customer side, the system features a responsive and user-friendly interface that allows customers to browse the product catalog, add items to their cart, proceed to secure checkout, and choose between digital wallet payments (G-Cash) or Cash on Delivery (COD). Additional features include viewing order history, tracking order status in real-time, and accessing product ratings and categories to enhance the shopping experience.

The system was developed using PHP and JavaScript as programming languages, MySQL for database management, and Hostinger as the hosting platform. Despite its comprehensive functionality, the study acknowledges certain limitations. These include restricted access to premium APIs and integrations with third-party systems such as accounting software, due to budget and experience constraints. Additionally, while the researchers were unable to develop a standalone mobile application or use dedicated POS hardware like barcode scanners and receipt printers, they addressed these limitations by ensuring the website is fully responsive across devices and leveraging QuaggaJS for camera-based barcode scanning.

Despite the system's comprehensive design and functionality, the study is subject to several limitations due to constraints in time, resources, and technical expertise. One major limitation is the inability to integrate third-party applications or paid APIs, such as advanced accounting systems or logistics management tools, which could have further extended the system's capabilities. This limitation is primarily due to the financial restrictions of the research project and the researchers' limited experience in integrating complex external systems. Additionally, the system does not include the development of

a standalone mobile application, which would have further enhanced accessibility and user convenience. Instead, the researchers opted to develop a responsive web interface to ensure usability across different devices, including smartphones and tablets.

Moreover, the study does not make use of specialized POS hardware such as dedicated barcode scanners, receipt printers, or touchscreen terminals. To address this, the researchers integrated QuaggaJS, a JavaScript-based barcode scanning library, allowing standard device cameras (like those on smartphones and laptops) to scan barcodes efficiently.

Significance of the Study

This study is important because it helps HealthPal Medical and Dental Supplies Trading improve how they run their business. By using a web-based POS system combined with an E-commerce platform, the company can automate tasks like inventory management and transactions. This reduces human error, speeds up the checkout process, and allows employees to focus on more critical tasks, ultimately leading to a better customer experience.

For the researchers, this study strengthens their technical and problem-solving skills in designing, developing, and deploying web-based business systems. It offers practical, hands-on experience in addressing real-world business challenges through technology.

The study also provides a valuable foundation for future research. It introduces innovative ideas and practical solutions that can be adapted and applied to similar business settings. By sharing their findings, the researchers contribute to the ongoing development of digital tools and solutions aimed at improving business operations.

Moreover, this study highlights the growing role of artificial intelligence and automation in streamlining business processes. By integrating intelligent features—such as predictive inventory management, automated data analysis, and customer behavior tracking—the system opens up opportunities for smarter, data-driven decision-making. This reflects a broader trend in the industry, where the use of AI-driven automation is transforming traditional workflows, enhancing efficiency, and setting new standards for competitiveness in the medical and dental supply sector and beyond.

Review of Related Literature and Studies

Advancements in Automated Point of Sale Systems

Sison, Oreiro, Camalit, and Ng (2019) developed an upgraded Point of Sale (POS) system to address inefficiencies in traditional systems while improving client support. Their study highlighted the significant role of automation in streamlining processes and ensuring operational accuracy. Jennylyn et al. (2019) also introduced a POS system focused on enhancing data accuracy and security, effectively reducing errors in daily transactions. Mendoza and Agustin (2019) emphasized the advantages of adopting automated POS systems, which optimize workloads and provide detailed reporting capabilities over manual processes. Similarly, Rahim and Ara (2019) highlighted the importance of data integrity in POS systems through advanced error detection mechanisms. Joko and Adhitomo (2019) presented a web-based POS system that enabled real-time data access and remote monitoring, showcasing the adaptability of POS systems to online platforms.

Enhancements in Inventory Management through Automation

Alegre and Gomez (2020) proposed an automated inventory system

designed to minimize stock discrepancies and streamline tracking. Their research demonstrated how automation enhances efficiency in inventory monitoring. Villanueva and Corpuz (2020) supported this by introducing a barcode-based inventory system that improves data entry accuracy and retrieval speed. Dela Cruz and Santos (2020) further reinforced the effectiveness of automated inventory systems, illustrating their ability to prevent overstocking and understocking issues. Rivera and Chua (2021) explored the integration of inventory systems with POS functionalities, creating an all-in-one solution for seamless business management.

Technology Integration in Sales Monitoring Systems

Martinez and Dizon (2021) studied a real-time sales monitoring system integrated with mobile applications, offering business owners easy access to sales data anytime and anywhere. Torres and Ramirez (2020) focused on a cloud-based sales monitoring system that facilitates scalability and accessibility for small to medium enterprises. Santiago and Bernardo (2021) highlighted the benefits of graphical sales representation, which aids decision-makers in analyzing sales trends and patterns efficiently. Garcia and Perez (2021) explored the potential of Artificial Intelligence (AI) in sales monitoring, enabling predictive analytics for future sales forecasting.

Improving Business Operations through Integrated Systems

Manalo and Panganiban (2021) investigated a fully integrated system combining inventory, sales monitoring, and POS functionalities to provide businesses with an all-encompassing operational tool. This research underscored the significance of interconnected systems in enhancing overall efficiency and decision-making. Navarro and Espinoza (2020) explored the customization of integrated systems to suit specific business requirements, allowing for greater flexibility and user satisfaction. Lastly, Gomez and Reyes (2021) highlighted the role of user-friendly interfaces in encouraging widespread adoption of integrated systems in businesses.

Conceptual Framework

The researchers developed a Web-Based POS and Integrated E-Commerce Platform for HealthPal Medical and Dental Supplies Trading.

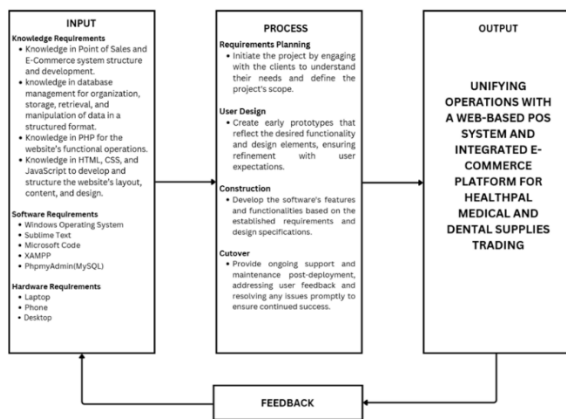


Figure 1. IPO Model

The input phase outlined all technical and operational requirements necessary for system development. It included PHP for backend development, MySQL for database management, and supporting tools such as Visual Studio Code (code editor), XAMPP (local server environment), and phpMyAdmin for managing databases. The required hardware included laptops and desktop computers for programming and administrative use, as well as smartphones, which

played a critical role in simulating customer interactions and mobile responsiveness. These phones were used for testing the E-commerce platform's mobile compatibility, ensuring that the website and order modules functioned seamlessly across different screen sizes. They also served as the primary device for barcode scanning through the QuaggaJS library, utilizing the built-in camera to detect and process product barcodes efficiently.

The process phase followed the Rapid Application Development (RAD) model, which began with client interviews to gather business requirements. The researchers then translated these insights into initial design blueprints and system architecture. This was followed by prototyping, where key features were quickly developed and presented for early feedback. Throughout the cycle, features were refined and expanded; while debugging and user testing were conducted iteratively to resolve issues and enhance performance.

The output phase marked the successful completion of the system, confirming that all client-specified requirements were met. This included functional modules such as real-time inventory tracking, barcode scanning, E-commerce integration, and secure checkout. The system was made publicly accessible through the domain: (<https://darkviolet-mole-551995.hostingersite.com/>)

Finally, the feedback phase assessed the system's effectiveness and alignment with client expectations. This involved gathering evaluations from target users, selected respondents, and a panel of experts using structured questionnaires and observation. Their feedback was used to validate the system's quality, usability, and overall performance—ensuring it was ready for real-world implementation.

METHODOLOGY

Project Design and Development

The study utilized the Rapid Application Development (RAD) methodology, which focused on reducing planning time and emphasized prototyping and iterative development. This approach involved collaboration between the researchers and clients, early user testing, and frequent feedback to quickly evolve the system. RAD promoted the reuse of existing prototypes, continuous integration, and smooth development, allowing the researchers to efficiently develop the system within a short time frame.

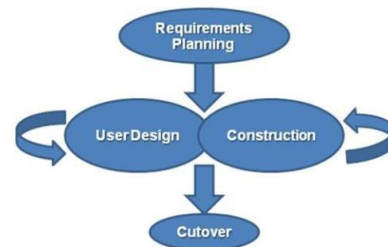


Figure 2. Rapid Application Development Model

During the initial phases of development, the researchers encountered several common errors and challenges, particularly related to data consistency, system responsiveness, and user interface design. A major issue was the inconsistency in the company's manually recorded data, which included incomplete inventory records and overlapping product entries. This led to difficulties in structuring the database and defining

accurate categories for inventory automation.

Another early challenge involved designing a user interface that was intuitive yet feature- rich; some interface prototypes were either too complex for non-technical users or lacked the necessary functionality requested by the client. Additionally, early barcode scanning attempts using QuaggaJS faced limitations under poor lighting conditions and with worn-out product labels, which required optimizing the scanning algorithm and camera settings. Server-side scripting bugs also caused minor setbacks, particularly in real-time inventory updates and order status synchronization between the POS and the E-commerce modules.

To overcome these issues, the researchers conducted frequent testing and refinement. Data inconsistencies were resolved by working closely with the client to clean and normalize historical inventory records, ensuring accurate migration into the system's MySQL database. Interface usability was improved through repeated prototyping, guided by actual employee feedback to ensure ease of use in real-world settings.

A crucial aspect of the project was the conversion of HealthPal's existing manual processes into a fully automated system. The researchers began by carefully studying the company's current workflows, such as how inventory was tracked using logbooks, how customer orders were recorded, and how sales were reported manually at the end of each day. These processes were mapped out and restructured into digital workflows within the web-based system. For example, manual inventory tracking was transformed into an automated real-time inventory management module, which now monitors stock levels, generates alerts for low inventory, and records all stock- in and stock-out transactions. Manual customer order tracking was replaced with a dynamic order management module, which automatically updates order status, processes modifications or cancellations, and integrates with the E-commerce site for seamless customer communication.

Sales reports that were once created manually at the end of each day were digitized into a sales module, capable of generating daily, weekly, and monthly reports complete with charts and analytics. Manual customer records were imported into the Customer Relationship Management (CRM) module, allowing easier access and updates to customer details and purchase history.

This design approach proved to be the best choice for HealthPal Medical and Dental Supplies Trading, as the RAD methodology's flexibility allowed the researchers to quickly implement improvements based on feedback, reduce system development risks, and ensure a high- quality, secure, and user-friendly system. By converting manual processes into intelligent digital modules, the company now benefits from improved operational efficiency, reduced human error, and enhanced customer engagement—laying a strong foundation for digital growth and scalability.

The diagramming tools such as sitemaps, data flow diagrams, relational database model, data dictionaries, and use case diagram were used to visualize, design, and analyze the flow of the developed system throughout its development cycle.

The development of the project started during the 3rd week of January second semester of the academic year 2023-2023 and will end in November first semester of 2024-2025 which will give the researchers a total of sixty-one (61) weeks to complete the overall capstone project.

Testing Procedures

The system was thoroughly tested in accordance with the ISO/IEC 25010:2011 software quality model, specifically focusing on functionality, accuracy, portability, security, and compatibility to

ensure it met industry-standard benchmarks.

Functionality testing involved ensuring that all system features performed as intended. Test cases included logging in with various user credentials (admin, employee, and customer accounts), generating and exporting daily, weekly, and monthly sales reports, and validating the smooth execution of invoice generation and payment processing. All modules were cross-checked against business requirements to ensure each action—such as adding to cart, updating inventory, and placing orders—functioned seamlessly.

Accuracy testing focused on the integrity and precision of the system's data. This included verifying that product prices, descriptions, stock quantities, and delivery schedules were correctly stored and reflected both in the admin dashboard and on the customer-facing E-commerce platform. Additionally, the payment summary and total computation were validated to ensure correctness, especially when discounts, taxes, or multiple orders were applied.

In the portability testing, the system's responsiveness and interface adaptability were tested across a range of devices, including laptops, desktop computers, tablets, and smartphones. The mobile version was assessed to ensure that customers could comfortably navigate the E-commerce site, make purchases, and track orders using only their phones. The QuaggaJS library was also tested on smartphones to scan barcodes accurately using the device's built-in camera.

Security testing evaluated the system's defenses against potential cyber threats. Tests such as brute force login attempts were conducted to assess password protection mechanisms. Input validation and SQL injection prevention were also tested, ensuring the system was not vulnerable to common attack vectors. Password encryption and session handling were inspected to confirm secure user authentication and data privacy.

In terms of compatibility testing, the system was evaluated primarily across Google Chrome and Microsoft Edge to ensure optimal performance on widely used modern browsers. During testing, some design-related inconsistencies were identified, such as misaligned layout components and overlapping UI elements, especially when accessed on mobile devices with smaller screen resolutions. Additionally, minor JavaScript errors were encountered that affected the responsiveness of interactive elements like modals, dropdowns, and real-time validation messages. These issues were addressed by refining the responsive design through CSS adjustments and implementing JavaScript fallback functions to improve stability. As a result, the system was able to provide a consistent and smooth user experience across different screen sizes and platforms.

For the payment module, the system supported both GCash and Cash on Delivery (COD) options. For GCash transactions, the process required the customer to manually send a screenshot or photo of their GCash payment receipt as proof of transaction. This image was uploaded during the checkout process and stored within the system's database. On the admin side, the system allowed authorized personnel to review the uploaded receipt and verify its authenticity. The admin checked details such as reference numbers, transaction amounts, and timestamps to determine whether the receipt was valid or potentially fabricated. Once verified, the order status was updated to "Payment Confirmed," and the system triggered real-time updates in the order tracking module. Customers also received automated email or in-system notifications confirming that their payment had been approved and that their order was being processed. This manual verification step was implemented as a precaution to ensure payment integrity in the

absence of full API integration with GCash.

Evaluation Procedure

The researchers conducted a system demonstration and evaluation with 54 total respondents, including IT students and employees from Colegio de San Juan de Letran, IT professionals, Employees from HealthPal Medical and Supplies Company, as well as customers from relatives, family, and friends. Respondents were provided with a recorded system demonstration video, an actual demonstration, and a Google link form for evaluation. The evaluation followed the quality criteria outlined in the ISO/IEC 25010 Diagram to ensure that the developed web-based system met the necessary qualifications and standards.

The application was evaluated based on key qualities such as functional suitability, performance efficiency, compatibility, usability, reliability, security, portability, and maintainability. Functional suitability focused on the completeness, correctness, and appropriateness of the application's functions, while performance efficiency assessed resource optimization, including time behavior, resource utilization, and capacity. Compatibility examined how well different components worked together, ensuring co-existence and interoperability. Usability considered the ease of use, including learnability, operability, user error protection, aesthetics, and accessibility. Reliability evaluated the system's ability to perform under specific conditions, including fault tolerance and recoverability. Security ensured the maintenance of confidentiality, integrity, accountability, and authenticity. Portability was tested in terms of adaptability, installation, replacement, and affordability in various environments. Lastly, maintainability addressed the system's capacity for future improvements through modularity, reusability, analyzability, modifiability, and testability.

The Likert Scale was used to provide a qualitative interpretation of the quantitative responses gathered from the evaluation form. It converts numerical data into meaningful categories, helping analyze and interpret feedback effectively.

Table 1. Likert Scale

Numerical Scale	Descriptive Rating
5	Excellent
4	Very Good
3	Good
2	Fair
1	Poor

Statistical Tools

For statistical analysis, the study employed the mean as a measure to summarize responses for each survey question, providing a central tendency that reflects the overall evaluation. The mean (\bar{x}) is calculated by dividing the sum of all responses ($\sum x$) by the total number of respondents (n). Each question's mean was calculated to summarize the respondents' evaluation, and the interpretation was guided by a predefined scale.

Table 1. Descriptive Evaluation of the Mean

Numerical Scale	Verbal Interpretation
4.51-5.00	Excellent
3.51-4.50	Very Good
2.51-3.50	Satisfactory
1.50-2.50	Fair
1.00-1.50	Poor

The target respondents for this study included the owner of HealthPal Medical and Dental Supplies Trading, customers, employees, IT professionals, and other users of the developed web-based system. These respondents were surveyed to gather their feedback and provide

recommendations for the project's improvement.

Project Structure

The system, "Web-Based POS System and Integrated E-Commerce Platform for HealthPal Medical and Dental Supplies Trading," was developed to replace the company's previous manual processes with a digital solution. Its purpose is to enhance business operations, improve marketing strategies, and boost revenues. The system consists of several key modules: the User Management module, which handles different user types; the Order Management module, which tracks order history and fulfillment; the Purchasing module, which manages stock levels and product replenishment; the Inventory Management module, which monitors product catalogs and stock availability; the Sales module, which generates reports and displays revenue charts; the After Sale module, which addresses user feedback and product refunds; the Point of Sale (POS) module, which handles the physical store's checkout process; the E-commerce Integration module, which manages online user log-ins, product browsing, and order checkout; and the Checkout module, which guides users through the purchase process. Together, these modules streamline operations and contribute to the overall efficiency of HealthPal's business.

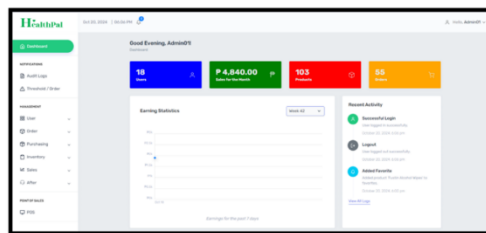


Figure 3. Admin Dashboard

This is the admin dashboard page of the overall system of the site, it can only be accessed by the admins and employees of the company. The admin dashboard shows the different processes that the E-commerce and Point of Sale system do though there will be some changes on the employee side such as no audit logs, user management, and purchasing module.

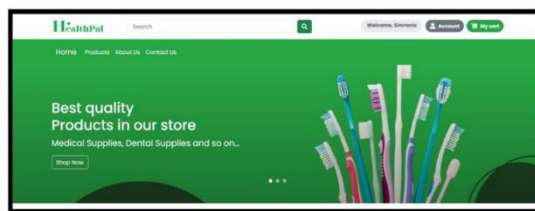


Figure 4. E-Commerce Website

The E-commerce website of the company. Users can browse different products, as well as adding their orders to the cart to process the checkout transactions. Additionally, users can view their orders on the account button, on which they can view their orders, cancelled orders, and after-sales order on which the user can refund their order once they received the order that is somehow damage on delivery.

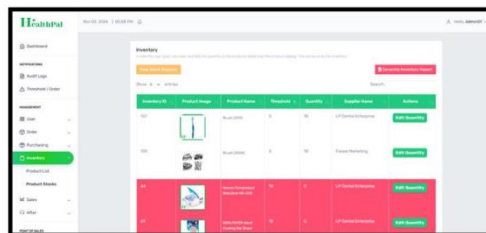


Figure 5. Inventory Module

This page is where the user can view all the products' stocks and their respective threshold for restocking. It also shows threshold coloring when a certain product needs to be restocked such as red for no stock, yellow for low stock, and white for above the threshold. Additionally, it can also generate inventory reports and view the stock reason on why the product is edited.

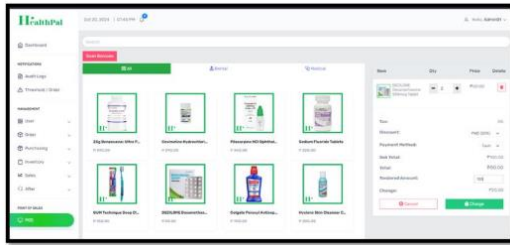


Figure 6. Point of Sale System

This is the point-of-sale system of the company; it is used in the physical store of the company as it serves as the physical store transaction system. The interface shows all the available products of the company as well as the checkout function of the system. The user can also search for a product based on the product name as well as use barcode scanning to automatically add the product to the checkout function or to avoid searching for it. The checkout function has transaction details such as payment method, tax, discounts for either PWD or senior citizens, total purchase, and tendered amount for money changes. After the charge, it will show a complete invoice for the transaction and the user can print the invoice.

The system includes key modules to enhance business operations and customer experience. The Sales Module generates comprehensive reports such as daily, weekly, and monthly sales, along with dynamic visual charts. The Inventory Management Module provides real-time stock tracking, ensuring accurate records and timely restocking through alerts for low inventory levels. Integrated with the inventory, the Product Catalog Module displays product descriptions, prices, and sizes, ensuring accurate information is available for both in-store and e-commerce platforms.

The Order Management Module handles the processing and fulfillment of orders, including tracking, status updates, and coordinating inventory for stock availability. The system also supports Real-Time Order Tracking to monitor orders from placement to delivery. For customer interaction, the Customer Relationship Management (CRM) Module organizes information related to administrators, employees, and customers, while the Customer Purchase History Module records individual customer preferences and past purchases.

The Purchasing Module manages supplier relationships, product procurement, and payment transactions. Post-purchase needs are addressed by the After Sales Service Module, which handles returns, warranties, repairs, and customer inquiries. The Point of Sales System ensures efficient in-store transactions with barcode scanning, product images, and automatic total calculations.

On the customer side, the E-Commerce Integration Website provides a seamless shopping experience with features like the View-Order Module for order tracking, an Add to Cart Module for convenient shopping, and a Check-Out Module for secure transactions. The Product Catalog Module showcases available inventory, categorized by size, price, and ratings. Customers can track their purchases using the Order Status Module, and payments can be made via digital wallets or cash on delivery through the Payment Module. Together, these modules create

a cohesive system for streamlined business operations and an enhanced customer experience.

The developed system offers several capabilities and strengths that contribute to its effectiveness. Being a web-based platform, it can be accessed from any location with a stable internet connection. The system enables real-time inventory management, accurately tracking stock levels across both online and walk-in stores. It also has robust sales reporting features that generate detailed reports to analyze performance and trends. Customer support is integrated within the system, allowing feedback collection through multiple channels. The order fulfillment process is efficiently tracked, ensuring timely delivery. A responsive interface ensures that the system is accessible on various devices, and product catalog management allows for easy updates to product listings, descriptions, and prices. User role management is available, assigning different access levels to users based on their roles. The system also supports returns and exchanges processing, product reviews and ratings, and maintains product thresholds to alert users to low stock levels. Audit logs track user activities, ensuring accountability, while system notifications help manage inventory control and order fulfillment. Additionally, the point-of-sale module includes a flexible barcode scanner that can utilize device cameras for scanning.

Despite its strengths, the system has some limitations. It is heavily dependent on internet connectivity, as both the web-based POS and e-commerce platform require a stable connection to function effectively. The system's reporting capabilities are limited to dynamic reports, and it does not support historical or static reporting. Additionally, it lacks delivery tracking features, such as real-time shipping updates. There is no API integration with external payment systems, like G-Cash, and the payment options available are restricted to cash or manual G-Cash payments processed through images. The project's scope is also limited, focusing only on system design and purpose, excluding features such as logistics tracking, credit card payments, or marketing campaigns due to complex approval processes. Lastly, the system is geographically limited, being more suitable for operations within the Philippines, making it difficult to cater to international customer.

RESULTS AND DISCUSSION

The evaluation of the system was conducted using the ISO/IEC 25010:2011 standard, which provides a comprehensive framework for assessing software quality through key indicators. These indicators include functionality, reliability, usability, performance efficiency, security, compatibility, maintainability, and portability. Each attribute represents a critical dimension of software quality, ensuring the system's ability to meet user requirements, maintain operational efficiency, and adapt to various environments. By adhering to this international standard, the evaluation aims to provide a detailed and objective analysis of the system's strengths, identify areas of excellence, and highlight opportunities for improvement, ensuring it aligns with global benchmarks for software quality.

Table 3 Summary of Evaluation Indicators

Indicators	Mean	Interpretation
Functional Sustainability	4.75	Excellent
Reliability	4.68	Excellent
Portability	4.64	Excellent
Usability	4.69	Excellent
Performance Efficiency	4.62	Excellent
Security	4.63	Excellent
Compatibility	4.62	Excellent
Maintainability	4.67	Excellent
GENERAL WEIGHTED MEAN	4.66	Excellent

Table 3 shows the summary of all evaluation indicators that the researchers conducted. Each of the evaluation indicators received consistently high scores, with individual mean ratings ranging between 4.6 and 4.7. These ratings fall under the category of "excellent," reflecting the effectiveness and reliability of the system as perceived by the evaluators. The overall total weighted mean score of 4.66 further emphasizes the system's strong performance across all measured criteria, achieving an excellent rating for each indicator.

Functional Suitability (Mean: 4.75)

This measures whether the system functions as intended and meets specified requirements. Test scenarios included processing customer orders, updating inventory levels in real-time, barcode scanning, and generating sales reports. High accuracy was observed, with error rates consistently below 2% during transaction simulations—demonstrating the system's reliability in processing sales and reflecting accurate stock updates.

Reliability (Mean: 4.68)

Assessed through stress testing and simulated peak usage, reliability focused on the system's ability to perform consistently without failure. The system maintained stable operations even during simultaneous access by multiple users, with no downtime or system crashes reported during testing.

Portability (Mean: 4.64)

The system was tested across various browsers (Chrome, Microsoft Edge) and devices (desktops, tablets, smartphones). It showed consistent behavior and responsiveness, affirming its adaptability across platforms—critical for both store-based and online users.

Usability (Mean: 4.69)

Evaluators tested the interface's ease of navigation, intuitiveness, and user-friendliness. Features such as the checkout process, order tracking, and the admin dashboard were particularly commended for their clarity. Usability tests showed that new users could complete essential tasks without external help within the first 10 minutes of use.

Performance Efficiency (Mean: 4.62)

Measured through system response times and loading speed, particularly in high-load operations such as generating reports or processing multiple transactions. On average, the response time was under 1.5 seconds per action, and the system remained responsive during concurrent usage.

Security (Mean: 4.63)

Security tests involved authentication validation, form input sanitization, and user data encryption. No major vulnerabilities were identified, and passwords and sensitive information were securely stored using standard hashing techniques. The system also includes role-based access controls to prevent unauthorized usage.

Compatibility (Mean: 4.62)

This refers to the system's ability to integrate and interact with other applications or services. While third-party integrations were limited due to budget and time constraints, the system successfully synchronized data between the POS and E-commerce modules, ensuring real-time data updates across platforms.

Maintainability (Mean: 4.67)

Evaluated based on system modularity and code structure. The researchers ensured clear documentation and separation of code functions, which facilitates easier updates or bug fixes. The RAD

methodology aided in refining maintainability through frequent revisions and feedback loops.

Accuracy of the System

Although not listed as a distinct ISO/IEC 25010 quality attribute, accuracy is embedded within both functional suitability and performance. The system achieved an average accuracy rate of 98.6% during transaction tests—validated through manual cross-checking with traditional records during simulation. This high level of accuracy reflects the system's effectiveness in calculating sales, managing inventory, and processing customer information without significant errors.

The high values can be attributed to several factors. First, the system's design and functionality were developed with a strong focus on usability, efficiency, and meeting the specific needs of the client, which likely resonated well with the evaluators. Second, the iterative development process, involving continuous feedback and refinement, ensured that the final system addressed potential issues early and incorporated improvements that enhanced its performance.

The high scores also reflect the thoroughness of the researchers' approach in addressing all aspects of system development, from security and reliability to scalability and ease of use. By prioritizing these elements and maintaining close collaboration with the client, the researchers were able to deliver a solution that met or exceeded expectations, as shown by the excellent evaluation results.

The study focused on developing a unified web-based POS system and integrated E-commerce platform for HealthPal Medical and Dental Supplies Trading. This web application transformed the company's manual operations into digital processes, including inventory management, order tracking, and online marketing through a dedicated website. The researchers also created a POS system to support store operations, facilitating payment processing, sales tracking, and barcode scanning for medical and dental supplies.

The overall findings indicate that the system achieved excellent performance across all evaluated criteria, with an average rating consistently above 4.6 across all indicators, signifying high functionality, reliability, usability, and efficiency. These results affirm the system's exceptional quality and effectiveness.

CONCLUSION

The study successfully met its objectives by addressing the operational needs of HealthPal Medical and Dental Supplies Trading. It digitized key processes, replacing manual operations with a web-based system that improved efficiency and reduced errors. The system introduced functional access levels for administrators, employees, and customers, enabling seamless product management and interaction. Core business functions, including inventory management, sales, purchasing, and point-of-sale operations, were fully digitized, allowing for real-time tracking and operational accuracy. This transformation enhanced the company's efficiency and marked a significant achievement for both the researchers and HealthPal.

This study provides valuable insights into designing and implementing integrated web-based systems for small to medium-sized businesses. It demonstrates the effectiveness of user-centered design and iterative development, such as RAD, in addressing operational challenges. Future research can apply similar approaches to other industries or

refine the methods used.

Practically, the study highlights the importance of digitizing operations to improve efficiency and meet modern business demands. By replacing manual processes with a web-based system, it serves as a model for enhancing operations through technology, showcasing benefits like real-time tracking, error reduction, and role-based access, adaptable across various sectors to improve workflow and customer satisfaction.

Recommendations

To further enhance the system's functionality and user experience, the researchers recommend incorporating several key features. First, integrating discount and voucher features can serve as a strategic tool to attract more customers and encourage repeat purchases. Discounts and vouchers are widely recognized as effective promotional tools, providing an incentive for customers to explore products and make purchases.

Another recommended enhancement is the inclusion of AI-powered chatbots to improve customer support. These chatbots provide instant, round-the-clock assistance, ensuring that customer inquiries are addressed promptly. With the ability to handle common questions, offer product recommendations, and assist with order tracking, AI chatbots significantly enhance the user experience while reducing the workload on customer support teams. Over time, these chatbots can adapt to customer needs through machine learning, delivering increasingly accurate and efficient support.

Additionally, the researchers suggest implementing a barcode search feature to streamline product discovery and inventory management. This functionality allows customers to find products quickly and effortlessly by scanning barcodes, eliminating the need for manual searches and enhancing the overall shopping experience. For employees, barcode scanning simplifies tasks such as inventory tracking and point-of-sale operations, ensuring greater accuracy and efficiency.

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INDUSTRY TRENDS' INFLUENCE ON ACCOUNTANCY STUDENTS' SCOPE OF PRACTICE PREFERENCES IN SELECTED UNIVERSITIES IN MANILA

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ABSTRACT

Grounded in literature on the transformative effects of technological innovation on accounting, this study examined the influence of emerging industry trends (Automation and AI, Blockchain, Cloud Computing, and Data Analytics) on accountancy students' preferences for the scope of practice in selected Manila universities. It investigated whether these trends significantly affect students' preferred scope of practice and whether Career Adaptability, measured via the Career Adapt-abilities Scale – Short Form (CAAS-SF), moderates this relationship. Using a quantitative-descriptive design, data were collected from fourth-year accountancy students using a structured questionnaire, and analysis was conducted using Ordinal Logistic Regression and Moderated Regression Analysis. Results showed that industry trends positively influenced preference for Public Accountancy and negatively influenced preference for Academe, with no significant effects on Commerce and Industry or Government. Career Adaptability moderated the relationship for Public Accountancy but not for other scopes. Findings underscore the need to align accounting education with technological advancements and foster adaptability among future professionals, offering insights for educators, practitioners, and policymakers in preparing students for a dynamic, technology-driven accounting environment.

Keywords: *industry trends, career adaptability, accountancy profession, accountancy students, career decision*

INTRODUCTION

The accounting profession remains a cornerstone of financial stability and economic development, fostering transparency, accountability, and informed decision-making across organizations and institutions. However, the accounting profession is experiencing rapid change due to significant technological advances like Automation, Artificial Intelligence (AI), Blockchain, Cloud Computing, and Data Analytics. These trends are transforming how accounting tasks are done, boosting the use of automated processes, real-time financial reports, and secure digital transactions. Around the world and locally, companies are adopting digital accounting systems and relying on data-driven decision-making, while educators are incorporating technology-based skills into accounting courses. As firms rely heavily on advanced technologies, the competencies required of accounting professionals continue to evolve beyond traditional bookkeeping and compliance functions toward analytical, technological, and strategic expertise. As these innovations become central to modern practice, the skills and expectations for future accountants continue to develop. As these trends become embedded in professional practice, accounting students are confronted with a dynamic environment that influences how they perceive and evaluate potential career paths.

The emergence of these new technologies has presented challenges in the accounting field. Students are increasingly expected to develop both traditional accounting skills and advanced digital competencies. However, many feel uncertain about which area of practice—such as public accounting, commerce and industry, academe, or government—best fits the evolving demands of the profession. The quick adoption of industry trends raises concerns about students' readiness, career paths, and ability to adapt to technology-driven workplaces.

Existing local studies have primarily examined traditional determinants of career choice, including salary expectations, job security, personal interests, academic performance, and market conditions. However, limited empirical research in the Philippine

context has specifically investigated how industry trends influence the preferences of students for the scope of practice. This creates a research gap in understanding how technological changes directly shape career decisions among accountancy students

This research aims to determine how industry trends and career adaptability influence the scope-of-practice preferences of accountancy students at selected universities in Manila. Specifically, it seeks to answer the following questions: (a) What are the respondents' demographic profiles in terms of age, sex, and school?; (b) What is the level of perception of the respondents on the following industry trends: automation and AI, blockchain, cloud computing, and data analytics?; (c) What is the level of career adaptability of the respondents based on the Career Adapt- Abilities Scale (CAAS)?; (d) What is the respondents' ranking on their preferred scopes of practice in public accountancy, commerce and industry, academe/education, and government?; (e) Does the perception of industry trends significantly influence the scope of practice preferences of accountancy students?; and (f) Does career adaptability significantly moderate the relationship between industry trends and scope of practice preferences?

In this context, the research is guided by the following specific objectives: (1) to identify the significant relationship between students' perception of industry trends and their scope of practice preferences in selected universities in Manila; (2) to evaluate the level of career adaptability among accountancy students using the Career Adapt-abilities Scale (CAAS); and (3) to determine whether career adaptability significantly moderates the relationship between perceptions of industry trends and practice preferences.

Benefiting from the study are individuals and groups as follows: (1) Accounting Firms and Industry Practitioners, who will gain insights into the evolving career preferences of future professionals. The findings may guide them in adjusting their recruitment strategies, designing skills-based training programs, and aligning workplace expectations with the technological advancements shaping the accounting field. (2) Educational Institutions, which may use the

results to strengthen curriculum development by incorporating technological skills such as automation, cloud systems, and data analytics. This helps schools ensure that their programs stay responsive to emerging industry demands. (3) Accountancy Students, who will benefit from increased awareness of how current industry trends influence their potential career paths. With this understanding, students can make more informed decisions about their chosen scope of practice and the skills they need to develop. (4) Future Researchers, who may use this study as a key resource for exploring topics related to technology-driven career trends, accounting education, and specialization within the profession. This study integrates industry trend awareness and career adaptability within a single analytical framework and extends existing theoretical perspectives while providing a foundation for further empirical investigation in the Philippine context.

Theoretical Background

Career Adaptability Theory

This study is based on Career Adaptability Theory by Savickas (2005), which explains how individuals handle career-related tasks, challenges, and changes in a dynamic work environment. The theory highlights four key dimensions: Concern, Control, Curiosity, and Confidence that represent the psychosocial resources people use to navigate career development. These dimensions are assessed using the Career Adapt-Abilities Scale (CAAS) and its validated short form (CAAS- SF). The theory is relevant to this research because the accounting profession is experiencing significant changes due to industry trends such as Automation and AI, Blockchain, Data Analytics, and Cloud Computing. As these trends shift professional expectations, accounting students must adapt accordingly. Career adaptability acts as the moderating variable, influencing how students interpret these industry changes and how those interpretations impact their scope-of-practice preferences in Public Practice, Government, Commerce and Industry, or Academe. The conceptual framework illustrates how the study's variables interact. Perception of Industry Trends serves as the independent variable, representing students' awareness and understanding of technological advancements affecting the accounting field. Scope of Practice Preference is the dependent variable, indicating the specific accounting career path students intend to pursue. Career Adaptability functions as the moderating variable, potentially changing the strength or direction of the relationship between perception of industry trends and career preferences. The students' demographic profile, including age, sex, and school, is included for descriptive purposes. Overall, the model demonstrates how students' perceptions of emerging industry trends and their level of adaptability combine to influence their preferred accounting career paths.

Review of Related Literature

Emerging Industry Trends in the Accounting Profession

Technological advancements have greatly transformed the accounting profession by changing how financial data is processed, analyzed, and protected. Automation and artificial intelligence (AI) is one of the trends that have significantly transformed the accounting profession by automating routine and high-volume processes such as transaction processing, financial reporting, tax preparation, and reconciliations, resulting in improved efficiency, reduced processing time, and minimized human error (Hazar & Toplu, 2023; Garcia, 2023; Chukwuani, 2024). Through these developments, the role of accountants has shifted from clerical and compliance-oriented functions to more analytical, advisory, and strategic responsibilities that contribute to organizational performance and innovation (Yassin et al., 202). AI-driven systems also enhance the quality and reliability of financial information by enabling predictive analysis, real-time fraud detection, automated risk assessment, and data-driven decision-making in both private and public sector environments (Djellal Ameer

& Benichou, 2024; Ćosić et al., 2024; Hossain et al., 2024).

The integration of intelligent technologies strengthens audit quality, internal controls, and financial forecasting while allowing professionals to focus on higher-value tasks that require professional judgment and strategic thinking (Bradford et al., 2024; Nkwede & Aniuga, 2023). In the Philippine context, the adoption of AI has been associated with improved operational efficiency, enhanced service delivery, cost savings, and greater openness to technological transformation among accounting personnel and institutions (Fontanilla et al., 2022; Moron & Diokno, 2023; Amoroso et al., 2023; Villafior et al., 2024). These findings indicate that technological competence, data analytics capability, and digital literacy have become essential skills for future accounting professionals.

Despite these advantages, AI has not fully replaced human expertise, particularly in areas that require critical thinking, ethical judgment, and qualitative analysis (Bendal et al., 2021). The literature consistently emphasizes the need for continuous professional development and curriculum enhancement to prepare accountants for technology-driven environments (Hossain et al., 2024; Yassin et al., 202). At the same time, several ethical, technical, and organizational challenges affect its implementation, including concerns related to data privacy, cybersecurity, algorithmic bias, lack of transparency, high costs, infrastructure limitations, and workforce displacement (Tagamolila, 2023; Djellal Ameer & Benichou, 2024; Fontanilla et al., 2022; Gella et al., 2025). These issues are more evident in institutions with limited resources and insufficient technological readiness.

Additionally, blockchain technology also has emerged as one of the most transformative digital innovations affecting the accounting and finance sectors due to its decentralized, encrypted, and immutable ledger system that enhances the security, transparency, and reliability of financial information (Tripathi et al., 2023; Iqbal et al., 2025). Unlike traditional centralized databases, blockchain enables collective verification of transactions across a distributed network, thereby reducing the risk of data manipulation, system failure, and cyberattacks while strengthening the integrity and auditability of accounting records (Garanina et al., 2021; Bellucci et al., 2022). This capability addresses long-standing vulnerabilities in conventional accounting systems and supports the growing demand for trustworthy and real-time financial reporting (Almadadha, 2024).

The integration of blockchain into accounting information systems improves transactional certainty, automates key recording processes, enhances managerial control, and reinforces decision-making through reliable and tamper-resistant data (Fullana & Ruiz, 2020). In auditing, the immutability of blockchain records reduces opportunities for earnings manipulation and provides verifiable audit evidence, thereby improving the credibility of financial statements (Bellucci et al., 2022). These developments also redefine the role of accountants by shifting their focus from routine reconciliations and ledger maintenance toward technology-oriented, analytical, and advisory functions (Campos, 2023).

The adoption of blockchain is increasingly evident in professional practice, as major accounting firms develop blockchain-based audit, assurance, and business process solutions to support smart contracts, digital transactions, and automated compliance (Chen, 2022). This indicates that blockchain is not only a technological tool but also a driver of new service areas and professional opportunities within the accounting field. In the Philippine context, the growing participation in cryptocurrency and digital asset investment reflects a broader national readiness to engage with blockchain-based systems and highlights the relevance of this technology in future financial and accounting environments (Inquirer, 2024).

Despite its advantages, the literature also identifies several barriers to blockchain adoption, including the absence of uniform regulatory

frameworks, high implementation and operational costs, scalability issues, significant energy consumption, and the need for specialized technical expertise (Chavali et al., 2024; Tripathi et al., 2023). Concerns regarding data privacy and the technical complexity of integrating real-world assets into blockchain platforms further limit its widespread use, although emerging solutions such as homomorphic encryption and sidechains aim to address these issues (Georgiou et al., 2024). These challenges are particularly critical for developing economies and organizations with limited technological infrastructure and financial resources.

In the Philippine setting, available discussions highlight national participation in digital assets and the need for organizations to invest in blockchain-related infrastructure and skills, yet there remains a scarcity of studies examining how these developments shape students' views regarding their preferred field of practice within the accounting profession (Inquirer, 2024; Lofranco, 2024). As blockchain continues to redefine accounting roles by reducing routine functions and increasing demand for technology-oriented competencies, understanding its influence on career decision-making becomes essential for aligning accounting education with the evolving labor market.

Furthermore, cloud computing (CC) has become a cornerstone technology in the digital transformation of accounting by enabling on-demand access to computing resources, financial data, and web-based accounting applications without the need for extensive physical infrastructure or local system maintenance (Chanthinok & Sangboon, 2021; Wahyuni, 2020). Through cloud-based platforms, accounting information can be processed, stored, and accessed in real time from any location using internet-enabled devices, thereby improving operational flexibility, collaboration, and decision-making efficiency (Adjei et al., 2021; Kamal et al., 2023). Compared with traditional on-premise systems that rely on locally installed software and in-house servers, cloud accounting reduces the risk of data loss, minimizes manual system updates, and allows organizations to adopt scalable and cost-efficient solutions (Envoice, 2023; Adams, 2024).

The integration of cloud technology into accounting practice supports a wide range of functions, including auditing, taxation, financial reporting, and corporate services, while enabling faster communication between accountants, clients, and other stakeholders (Shamsudin et al., 2025). These systems enhance data security through controlled access mechanisms and authentication protocols and allow real-time sharing of financial information, which strengthens transparency and responsiveness in financial management (Romney et al., 2021). The flexibility of cloud deployment models, public, private, hybrid, and community, further enables organizations to align technological adoption with their operational, regulatory, and security requirements (Odeh et al., 2024; Patel & Kansara, 2021).

Cloud service models such as Software as a Service (SaaS), Infrastructure as a Service (IaaS), and Platform as a Service (PaaS) provide organizations with scalable, customizable, and cost-effective alternatives to traditional IT infrastructure while supporting innovation and digital integration across business processes (Alam et al., 2024; Odeh et al., 2024). The rapid global expansion of cloud services and the dominance of major providers highlight its strategic importance in modern business environments and its role in enterprise system modernization (Gartner, 2023; Weinberg, 2024).

In the accounting profession, cloud computing enhances audit efficiency, facilitates real-time financial analysis, and reduces the administrative burden associated with managing local systems (Ali et al., 2024). However, outsourcing financial data to third-party providers

also requires stronger audit mechanisms, data integrity controls, and cybersecurity competencies to maintain accountability and client trust (Ali et al., 2024). As cloud adoption increases, accountants are expected to develop expertise in cloud accounting systems, data security, and digital auditing, indicating a shift in the competency requirements of the profession (Ali et al., 2024; Weinberg, 2024).

Evidence from the Philippine context shows that cloud computing improves productivity, collaboration, and accessibility in educational institutions and business organizations, particularly during periods that require remote operations (Alimboyong & Bucjan, 2021). Among micro, small, and medium enterprises (MSMEs), cloud adoption is driven by the need for automatic data backup, remote access, cost reduction, regulatory compliance, and competitive pressure (Eduardo et al., 2024; Matias & Hernandez, 2021). Nevertheless, low digital literacy, limited technical skills, poor internet connectivity, data security concerns, and resistance to change remain significant barriers to adoption (Alimboyong & Bucjan, 2021; Eduardo et al., 2024). These findings emphasize the critical role of accountants in promoting cloud literacy and leading digital transformation initiatives within organizations.

The rise of data analytics (DA) has also significantly transformed the accounting profession by enabling the processing, analysis, and interpretation of massive volumes of structured and unstructured financial information for real-time and strategic decision-making (Theodorakopoulos, 2024; Deniswara, 2020). As organizations generate increasingly complex datasets, traditional data processing methods become insufficient, leading to the adoption of advanced analytical tools that allow accountants and auditors to identify patterns, detect anomalies, forecast financial performance, and improve organizational efficiency (Schmidt et al., 2020; Qasim & Kharbat, 2020). Through these capabilities, data analytics enhances the relevance, reliability, and timeliness of accounting information and strengthens the role of accountants as strategic partners in business operations (Ehioghiren & Addeh, 2023; Chu & Yong, 2021).

In auditing, the application of DA allows the examination of entire populations of transactions rather than relying on sampling techniques, thereby improving audit quality, fraud detection, risk assessment, and evidence gathering (De Santis & D'Onza, 2021; Alrashidi et al., 2022; Aziz, 2023). The integration of business intelligence tools and machine learning technologies enables auditors to perform continuous auditing, automate testing procedures, and provide deeper insights into client operations and financial performance (Austin et al., 2021; Dow et al., 2021). These developments shift the audit function from manual verification toward analytical evaluation and professional judgment, indicating a major transformation in the competency requirements of the profession.

Beyond auditing, data analytics supports performance evaluation, cost estimation, budgeting, financial forecasting, and forensic accounting, making it a critical driver of organizational success and operational efficiency (Andiola et al., 2020). By connecting information technology, statistics, and business processes, DA allows organizations to generate data-driven strategies and improve economic decision-making. As a result, expertise in analytics and digital technologies becomes an essential skill for modern accountants.

Despite its advantages, the implementation of DA in accounting remains slower compared with other industries due to challenges related to data quality, system integration, high costs, technical complexity, and data privacy concerns (Sihombing et al., 2023; Jiang, 2024; Rajput, 2024). Inconsistent data formats, incomplete

analytical outputs and require strong data governance frameworks and continuous professional training. Ethical and regulatory issues, particularly in protecting sensitive financial information and complying with data protection laws, further complicate its adoption.

In the Philippine context, the increasing reliance on data analytics across sectors such as finance, healthcare, and e-commerce reflects the growing recognition of data as a strategic organizational asset and a driver of competitive advantage (Dela Cruz, 2022; Escolano et al., 2024). However, studies also reveal a significant skills gap in data science and analytics, indicating the need for stronger collaboration among government, academic institutions, and industry to develop a workforce capable of supporting a data-driven economy (Quismorio, 2020). The integration of analytics into business processes encourages organizations to invest in technology and human capital to remain competitive and responsive to labor market demands.

Despite the growing body of literature on emerging technologies in accounting, most studies concentrate on organizational adoption, system efficiency, audit quality, and professional readiness rather than on how these technological transformations influence the career perceptions and scope of practice preferences of accountancy students (Moron & Diokno, 2023; Bendal et al., 2021; Fullana & Ruiz, 2020; Campos, 2023; Ali et al., 2024; Matias & Hernandez, 2021; Alrashidi et al., 2022; Sihombing et al., 2023). In the Philippine context, existing research primarily highlights implementation, productivity gains, technological acceptance, and the growing demand for digital competencies, with limited empirical evidence explaining how students' awareness of AI and automation, blockchain, cloud computing, and data analytics shapes their preferred field of practice in the accounting profession (Fontanilla et al., 2022; Amoroso et al., 2023; Inquirer, 2024; Lofranco, 2024; Alimboyong & Bucjan, 2021; Eduardo et al., 2024; Quismorio, 2020; Escolano et al., 2024).

As these technologies continue to redefine accounting roles by reducing routine tasks and increasing the demand for analytical, digital, and technology-oriented competencies, understanding their influence on students' career decision-making becomes essential for aligning accounting education with the evolving labor market. Hence, there is a need to examine these emerging industry trends not only as organizational and technical innovations but also as external career-shaping factors that may influence the scope of practice preference of accountancy students.

Career Adaptability Theory

Career adaptability is rooted in Super's career development theory, particularly in the earlier concept of career maturity, which framed adaptability as an individual's ability to manage and adjust to changing career roles and developmental tasks (Super & Knsel, 1981). Super initially proposed measuring adaptability through indicators such as work values, autonomy, planning for the future, exploration and establishment, decision-making, and review of experience (Super & Knsel, 1979). This framework later evolved into the model of adult career adaptability, emphasizing planning, exploration, information, decision-making, and reality orientation as key dimensions relevant to adult career adjustment (Super & Knsel, 1981).

Building from Super's foundation, Savickas conceptualized career adaptability as a set of psychosocial resources that individuals utilize to cope with career transitions and challenges (Savickas, 1997). In response to modern labor market uncertainty, Savickas expanded this construct into four dimensions: career concern, career control, career curiosity, and career confidence (Savickas, 2005). These dimensions represent a dynamic interaction between individuals' internal motivations and external career demands, positioning adaptability as a regulatory resource that supports career development and decision-making in complex environments (Dike, 2015). Career concern reflects future orientation and preparedness, career control emphasizes

responsibility and ownership of career decisions, career curiosity involves exploration of self and occupational possibilities, and career confidence pertains to beliefs about one's ability to overcome career-related challenges and achieve goals (Savickas, 2005).

To operationalize career adaptability, Savickas and Porfeli (2012) developed the Career Adapt-Abilities Scale (CAAS), a 24-item instrument rated on a 5-point Likert scale, which demonstrated strong psychometric properties and cross-cultural reliability. To increase measurement efficiency, the Career Adapt-Abilities Scale-Short Form (CAAS-SF) was later developed as a 12-item scale that retained the four-factor structure and demonstrated measurement equivalence across groups (Maggiore et al., 2017). Subsequent validations further strengthened the scale's cross-cultural applicability across different populations, including working adults and university students in Portugal, business school students in India, and university students and professionals in China, supporting the CAAS-SF as a reliable and culturally sensitive measure of career adaptability in non-Western and dynamic labor markets (Soares et al., 2023; Pal & Jena, 2022; Yu et al., 2020).

Philippine-based research also provides evidence supporting the relevance of career adaptability. Tolentino et al. (2013) confirmed the reliability and construct validity of the CAAS among Filipino working adults and college students and found that career adaptability was positively linked to adaptive outcomes such as career satisfaction and promotability, with flexible goal adjustment playing a particularly significant role. Francisco and Castano (2020) further demonstrated that career adaptability influences employment behavior, showing that career concern predicts focused job search strategies, while curiosity and confidence relate to exploratory job search practices among graduate students in the National Capital Region. Additionally, Guillena (2022) reported that career adaptability among college student-athletes is strengthened by career self-efficacy and personality traits, emphasizing that psychological and personal resources contribute to adaptability in career development.

Overall, the literature indicates that career adaptability enables individuals, especially students, to regulate their responses to career demands, navigate uncertainty, and align career preferences with changing labor market conditions. In the context of accountancy education, career adaptability is particularly relevant because emerging industry trends such as automation and AI, blockchain, data analytics, and cloud computing are transforming the accounting profession and altering skill demands and career pathways. In this study, career adaptability refers to the psychosocial resources of accountancy students measured through the CAAS-SF across the four dimensions (concern, control, curiosity, and confidence), which account for individual differences in students' capacity to manage career-related change while considering emerging industry trends and scope of practice preference.

While the literature consistently supports career adaptability as a predictor of career outcomes such as satisfaction, employability behaviors, and work adjustment, much of the empirical research emphasizes general career development, job search direction, and adaptation outcomes rather than examining how career adaptability interacts with rapid professional transformations within specific disciplines (Tolentino et al., 2013; Francisco & Castano, 2020). Moreover, although the CAAS and CAAS-SF have been validated across cultures, studies tend to focus on measurement validity or broad career outcomes instead of investigating how adaptability shapes students' preferences for distinct professional pathways within a transforming occupation (Yu et al., 2020; Soares et al., 2023).

In accountancy, the profession is currently being reshaped by technological industry trends that change required competencies and redefine the nature of work across different fields of practice. However,

limited research has examined career adaptability as an explanatory factor that helps account for why students may differ in how they interpret these changes and how they form preferences for a particular scope of practice within the accounting profession. In the Philippine context, existing research demonstrates the importance of adaptability for career outcomes, but empirical work remains limited in linking adaptability to career preference formation under conditions of rapid technological change (Tolentino et al., 2013; Guillena, 2022).

Hence, there is a need to examine career adaptability not only as a general career resource but also as a key student-level factor that may shape how accountancy students respond to emerging industry trends and how they develop their scope of practice preference in a rapidly evolving profession.

Scope of Practice in Accountancy Profession

In Public accountancy, it involves the provision of independent professional services, primarily external auditing, taxation, and advisory, to a wide range of clients, including individuals, private entities, and corporations. Its central function is to enhance the credibility of financial reporting through assurance engagements that verify the fairness and reliability of financial statements and ensure compliance with regulatory and professional standards. As the demand for higher audit quality and real-time assurance increases, the integration of emerging technologies has fundamentally transformed audit methodologies and professional practices in public accounting.

Automation and artificial intelligence (AI) have streamlined audit procedures by reducing manual intervention and improving both efficiency and accuracy in financial assessments. AI-powered systems automate repetitive tasks such as data extraction, validation, and report generation, thereby reducing audit turnaround time and minimizing human error (Rajput, 2024). In addition, intelligent systems support advanced data cleaning, automated risk assessment, anomaly detection, and predictive analytics, enabling auditors to perform continuous and real-time assurance and to exercise more informed professional judgment (Luo et al., 2025). These developments shift audit practice from manual verification toward data-driven and risk-based auditing.

Blockchain technology further strengthens audit reliability by providing immutable and traceable transaction records that serve as verifiable audit evidence. The distributed ledger structure reduces the risk of data manipulation and enhances transparency, governance, and trust in financial reporting (Kroon et al., 2021). Smart contracts also automate compliance procedures, improving the accuracy and consistency of audit processes and reducing human error. Through these capabilities, blockchain enhances fraud detection and increases the level of assurance provided by public accounting firms.

Cloud computing has transformed the audit environment by enabling secure, real-time access to client data and facilitating remote collaboration among audit teams. Cloud-based platforms allow multiple auditors to work simultaneously on engagements, improving workflow efficiency and engagement timeliness while maintaining data integrity through advanced security features such as encryption and multi-factor authentication (Atadoga et al., 2024). This digital environment supports continuous auditing and technology-enabled assurance services.

Among these innovations, data analytics has become one of the most critical tools in modern audit practice. By enabling the examination of complete datasets rather than relying on sampling, data analytics improves risk assessment, substantive testing, and anomaly detection,

thereby enhancing audit precision and reliability (Tsao, 2021; Dempsey & Dyk, 2024). Firms that adopt analytics extensively, particularly big four firms, demonstrate stronger capabilities in data cleaning, testing, and visualization, which contributes to higher audit quality and more strategic client advisory services (Henry et al., 2023). Auditors with strong analytics competencies are also more likely to achieve sustained professional success and deliver higher-quality audit outcomes (Ditkaew & Suttipun, 2023). Consequently, the role of auditors has evolved from routine checking to providing data-driven insights and strategic recommendations (Chien, 2020; Kluwer, 2024).

In the Philippine context, technological transformation similarly influences public accounting practice. The adoption of big data analytics is increasingly recognized as essential for improving audit efficiency, decision-making, and resource allocation in assurance services (Escolano et al., 2025; Pamorca, 2023). Although adoption remains in its early stages, many firms have begun integrating analytics into core audit functions, reflecting the profession's shift toward technology-driven assurance (PricewaterhouseCoopers, 2020). These developments require practitioners to continuously acquire digital and analytical competencies in order to remain relevant in the evolving professional environment (Tugas & Tullao Jr., 2021).

Accountants in commerce and industry play a central role in generating reliable financial information that supports managerial decision-making, governance, and regulatory compliance. Their responsibilities typically include financial reporting, budgeting, internal control evaluation, risk mitigation, and performance analysis, enabling organizations to assess profitability, manage costs, and sustain ethical and effective operations. As private organizations increasingly adopt digital transformation, emerging technologies such as artificial intelligence (AI) and automation, robotic process automation (RPA), blockchain, cloud computing, and data analytics continue to reshape accounting functions, workflows, and the competency requirements of accountants in business settings.

AI adoption in commerce and industry enhances financial decision-making by enabling predictive forecasting, improved trend analysis, and more proactive financial planning using historical and real-time data. AI also supports financing strategies and cost-of-capital computation, thereby strengthening corporate financial management and strategic planning. Empirical evidence suggests that AI can reduce operational costs by automating routine accounting activities and improving organizational efficiency, while also driving structural transformation that redefines traditional financial management practices within companies (Hamza et al., 2024). However, AI integration is shaped by contextual constraints such as cultural, legal, and technical conditions, which influence implementation outcomes and adoption patterns (Hamza et al., 2024).

In addition to AI, automation technologies, particularly RPA, have become increasingly relevant in private-sector accounting operations by streamlining tasks such as invoice processing, payroll management, inventory tracking, transaction recording, and financial reporting. RPA improves operational efficiency by supporting data verification, validation, reconciliation, and database maintenance while strengthening internal controls through continuous monitoring and risk detection (Kavyashree et al., 2022; Hazar & Toplu, 2023). Research in Jordanian commercial banks indicates that RPA positively impacts internal auditing effectiveness, suggesting that automation strengthens audit oversight and organizational compliance through continuous supervision and standard-aligned processes (Alassuli, 2025; Tiron-Tudor et al., 2024; Lacurezeanu et al., 2020). These findings reinforce the view that RPA is not merely a clerical tool but a mechanism for

improving internal control reliability and organizational performance.

Blockchain technology also influences commerce and industry by strengthening transparency, traceability, and security in financial recordkeeping and supply chain operations. Organizations use blockchain to document transaction histories and product movement across supply chains, helping stakeholders verify authenticity and reduce fraud risks (Ayobami, 2024). Although corporate adoption remains relatively low, disclosures indicate a shift from cryptocurrency-related applications toward broader business implementations of blockchain (Stratopoulos et al., 2022). In accounting and auditing services, blockchain is expected to improve cybersecurity, strengthen data integrity, and promote organizational transparency, requiring organizations to adjust internal processes as part of broader digital transformation (Demirkan et al., 2020). Blockchain adoption also supports operational coordination and cost efficiency in production and supply chain processes, enhancing organizational performance through improved system integration and transparency (Giang & Tam, 2023).

Cloud computing further transforms private-sector accounting by enabling real-time access to financial data, remote collaboration, and reduced dependence on physical infrastructure. Cloud platforms support shared access to updated financial reports across departments and locations, strengthening coordination and improving operational efficiency (Mandava, 2024). Cloud-based accounting systems also automate routine data entry and processing through embedded algorithms and automation tools, thereby improving accuracy and productivity (Yathiraju, 2022). These advantages encourage organizations to adopt cloud solutions due to reduced hardware and software costs, faster processing, and improved accessibility of financial information.

Data analytics enhances business accounting by enabling organizations to analyze large volumes of financial data to detect trends, forecast cash flow, identify risks, and support investment decisions through modeling and predictive tools (Vysotskaya & Prokofieva, 2023). Big data analytics also improves business efficiency and profitability by reducing storage costs and accelerating decision-making through modern analytics tools (Lasanthika & Wickramasinghe, 2020). Collectively, these emerging technologies strengthen private-sector accounting by improving accuracy, security, accessibility, and strategic decision-making, while redefining accountants' roles from routine recordkeeping to analytics-driven advisory and control functions.

In the Philippine context, private organizations increasingly adopt automation and AI to improve efficiency, reduce human error, and strengthen competitiveness, with accounting functions often positioned at the forefront of digital transformation. Evidence suggests that computerization and the adoption of accounting software and ERP systems reduce errors and contribute to process precision, although initial investments may be costly and linked to workforce restructuring strategies (Bendal et al., 2020). Local developments also illustrate that AI-powered accounting solutions are being used to provide SMEs with data-driven insights and automated document processing, supporting real-time reporting and value-added services such as payroll and tax compliance (Galang, 2024). National business outlook data further indicates that Philippine organizations plan systematic AI integration across workflows, technology platforms, workforce development, and business strategy, highlighting AI's growing role as a driver of innovation and competitive advantage (PricewaterhouseCoopers, 2025). Automation adoption in the Philippines is also expanding, particularly in industries such as BPO and manufacturing, where RPA improves processing speed, accuracy, and customer service outcomes (Thim, 2025).

Similarly, cloud computing adoption is increasing among Philippine enterprises and MSMEs due to its efficiency and data protection benefits, although national cloud readiness challenges remain evident. The shift toward cloud-based accounting among MSMEs reflects the growing importance of digital transformation in improving operational efficiency and collaboration (Eduardo et al., 2024). However, regional readiness concerns, including connectivity limitations, cybersecurity issues, privacy risks, and infrastructure vulnerabilities, may constrain the pace and effectiveness of cloud adoption (Abril et al., 2022).

In the academe or education sector, it represents a key scope of practice in the accountancy profession, encompassing roles in teaching, curriculum development, research, academic administration, and professional training. As emerging technologies reshape accounting work, academic institutions are increasingly pressured to align accounting programs with evolving industry competencies, particularly in automation and AI, blockchain, data analytics, and cloud computing. This transformation requires not only updating course content but also redesigning learning experiences to ensure that graduates develop technology-driven skills relevant to modern professional practice.

Automation and artificial intelligence (AI) are increasingly influencing accounting education by enhancing instructional efficiency and enabling more personalized learning environments. AI integration in higher education supports adaptive instruction by tailoring content to student needs, while also automating routine academic tasks, allowing educators to focus on complex concepts and higher-level learning outcomes (Stroparo & Lemos, 2025). However, effective implementation requires ongoing faculty training and sufficient technological infrastructure (Stroparo & Lemos, 2025). In institutional operations, automated accounting systems have been linked to improved efficiency, reduced manual errors, and cost savings, underscoring the growing need to equip future accountants with competencies in automation and digital systems (Villanueva, 2025). At the same time, readiness remains uneven; accounting professionals in academic institutions may show willingness to adopt AI applications, yet full integration continues to progress gradually due to systemic and implementation constraints (Moron & Diokno, 2023). Philippine evidence also suggests that AI use may support learning outcomes, as higher levels of AI usage have been associated with stronger academic performance among ABM students, indicating its potential value in educational environments (Gella et al., 2025).

Blockchain technology is also emerging as a relevant tool in academic systems, particularly for strengthening security and authenticity in records management. In education, blockchain has been explored for protecting academic credentials, ensuring document integrity, reducing credential fraud, and enabling secure, immutable records of academic achievements (Tripathi et al., 2023). This technological capacity supports trust in credential verification and may foster stronger collaboration between academic institutions and industry stakeholders, particularly in environments that require reliable proof of competencies and qualifications (Tripathi et al., 2023).

Data analytics similarly reshapes accounting education by redefining the competencies expected of graduates in a data-driven labor market. While accounting programs have begun integrating analytics, evidence indicates persistent gaps between academic instruction and employer expectations, particularly when programs lack clear competency goals and assessment frameworks (Cainas et al., 2024). Labor market analyses further emphasize the demand for technical skills in data extraction, visualization, and analysis, and the importance of practical exposure to tools such as Excel, SQL, and Power BI (Askary & Askarany, 2024). To address these demands, accounting education increasingly adopts innovative learning approaches such as simulations, gamification, and

interactive platforms that enhance engagement and strengthen technological competency, including analytics-related skills (Tahar et al., 2025). These developments suggest that accounting educators must continuously revise curricula to integrate analytics content and ensure that students gain applied competencies aligned with industry standards.

Cloud computing (CC) also plays a major role in improving educational delivery and enabling digital learning environments by providing on-demand access to computing resources, storage, and applications through internet-based services (Invoice, 2023; Netesanyi, 2025). Cloud-based services enhance institutional efficiency by reducing infrastructure costs, improving collaboration through real-time document sharing, supporting virtual classrooms, and enabling scalable access to learning resources (Xuan & Rana, 2024). In accounting education, cloud technologies strengthen learning by creating interactive environments that simulate real-world accounting scenarios and professional tools, helping bridge the gap between theoretical learning and practical application (Karmanska, 2023; Jusop et al., 2024). Studies indicate that students often face challenges transitioning from academic learning to professional practice due to limited hands-on exposure to modern tools, resulting in gaps in areas such as data analysis, forensic accounting, and modern auditing (Abitoye et al., 2023). Cloud-based accounting software and enterprise platforms, such as QuickBooks, Xero, and SAP, allow students to practice real transactions and financial processes and develop familiarity with industry systems (Abitoye et al., 2023; Iyiner, 2024; Smith, 2024). This supports deeper understanding of practical accounting tasks such as reconciliations, payroll, and financial reporting (Steens et al., 2024). Moreover, evidence suggests a continuing mismatch between skills taught and employer expectations due to rapid technological change, reinforcing the need for curriculum redesign and the integration of cloud technologies to improve graduate readiness (Lemon et al., 2024).

Cloud deployment studies also indicate that hybrid cloud models may be most suitable for schools due to their capacity to balance scalability with security, enabling institutions to store sensitive data privately while using public cloud resources for scalable operations (Xuan & Rana, 2024). Cloud adoption in education is further supported by findings that institutions can access resources cost-effectively under pay-as-you-use models while allowing learners and educators to access materials anytime and anywhere (Ayanwale et al., 2024). Cloud-based applications such as Google Workspace tools have also been associated with improved productivity, communication, and collaboration in higher education contexts (Amin, 2020; Hafour & Al-Rashidy, 2020).

In the Philippine context, cloud computing adoption in state universities and colleges has demonstrated benefits for instructional delivery, student access, and administrative collaboration, particularly during the pandemic, although slow internet connectivity and limited awareness remain major barriers (Alimboyong & Bucjan, 2021). Evidence also suggests that cloud integration can improve teaching competence, supporting recommendations for broader training beyond IT faculty and extending toward non-IT educators and staff (Resol, 2022). Research also highlights the need to strengthen technology readiness among accounting students, who may exhibit optimism toward technology use while still experiencing discomfort and insecurity, suggesting the need for targeted curriculum and skills interventions (Busano et al., 2022). Moreover, professional digital competency studies indicate that while CPAs may demonstrate basic digital literacy, gaps remain in strategic IT management and risk response, reinforcing the need for curriculum alignment and continuous professional development (Montgomery, 2022). At the institutional level, cloud-based systems also support data processing, operational efficiency, and compliance requirements in higher education, although cybersecurity challenges persist and require

planning frameworks to ensure safe integration (Yap & Velasco, 2024; De Ramos & Esponilla, 2022).

In government practice, accountants are responsible for budgeting, financial reporting, auditing public funds, and ensuring that tax revenues and public resources are used efficiently, transparently, and in accordance with applicable rules and standards. In recent years, the integration of emerging industry trends, particularly automation and artificial intelligence (AI), blockchain, cloud computing, and data analytics, has reshaped public financial management by strengthening accountability mechanisms and improving the speed, accuracy, and transparency of government accounting systems.

Automation and AI have transformed public sector accounting by streamlining repetitive and data-intensive tasks and enabling more timely and evidence-based fiscal decision-making. AI-driven automation supports real-time financial reporting and can deliver immediate insights that assist policymakers in making informed fiscal decisions (Dimitru et al., 2023). AI systems can also simplify tax computations, improve regulatory compliance, and reduce human error in tax planning and related processes (Peng et al., 2023). In public sector control environments, continuous monitoring supported by AI enhances fraud detection by identifying anomalies that may signal financial irregularities (Brusseau, 2021). Beyond routine automation, AI also supports predictive analysis that allows governments to forecast revenue flows, budget trends, and performance outcomes for strategic planning (Schmitt, 2023). Collectively, these applications strengthen efficiency, reliability, and integrity in government financial management.

Blockchain technology has emerged as a complementary innovation that strengthens transparency, accountability, and data integrity in public sector accounting. Blockchain's tamper-evident architecture supports real-time, auditable records and reduces the risk of manipulation in public financial transactions (Prux et al., 2021). Adoption at the local government level is also linked to potential reductions in administrative costs and improvements in public finance management efficiency (Kowalczyk & Napiecek, 2023). However, the pace and effectiveness of blockchain integration remain closely tied to regulatory development, including policies on cybersecurity, data privacy, and cross-border transactions (Almadadha, 2024). Evidence from local government contexts suggests that adoption success depends on infrastructure readiness, organizational support, and trust in the technology (Ummah & Sofyani, 2024). Practical prototypes and conceptual models further suggest that blockchain-enabled tax systems and smart contracts may strengthen compliance, reduce corruption risks, and improve fiscal transparency, although technical and regulatory constraints continue to shape implementation (Søgaard, 2021; Ulya et al., 2024). Cross-national evidence also associates distributed ledger implementation with reduced procurement fraud and increased fiscal transparency, supporting blockchain's potential contribution to public accountability (Timilehin et al., 2025). Importantly, blockchain governance in the public sector must align with institutional contexts and regulatory environments to build trust and achieve operational efficiency (Tan et al., 2022).

Cloud computing also supports the modernization of public financial management by providing flexible, scalable platforms for storing and processing government financial information. Cloud-enabled systems improve accessibility and interoperability by allowing authorized departments, auditors, and policymakers to access financial records in real time, supporting transparent and data-driven governance. Cloud platforms can also complement blockchain-enabled services by improving system efficiency and reducing infrastructure burdens in public sector IT operations (Søgaard, 2021). For local governments, cloud computing may address technological constraints by

strengthening IT infrastructure and enabling more effective e-government services (Younus et al., 2025). These capabilities are essential for maintaining data availability, security, and coordination across agencies as governments modernize financial management systems.

Data analytics further strengthens government accounting by supporting risk-based monitoring, fraud detection, and evidence-driven policymaking. Analytics enables public institutions to analyze large financial datasets to forecast budgets, detect irregularities, and enhance expenditure management. Risk-based analytics supports early detection of anomalies and strengthens policy formulation through data-supported insights (Rozario & Issa, 2020). In public sector auditing, analytics also improves fraud detection by strengthening data collection, risk assessment, and evidence analysis, although ethical use requires strong data security safeguards and ongoing professional development to ensure accurate interpretation (Novita & Anissa, 2022). Through predictive and prescriptive analytics, governments can allocate resources more effectively and respond proactively to emerging fiscal risks.

In the Philippine context, evidence suggests a generally positive orientation toward AI adoption in local government units, driven by perceived usefulness, ease of use, and social influence (Distor et al., 2021). These findings are relevant to government accounting because AI can support public sector financial operations through automation of tasks such as reconciliation, reporting, and audit support, provided that digital infrastructure, institutional support, and skills development are strengthened (Distor et al., 2021). Moreover, government initiatives that explore blockchain-enabled platforms in treasury-related processes and public record security reflect the broader push toward digital governance and strengthened public trust, consistent with the accountability objectives of government accounting.

Although existing studies extensively document the technological transformation of accounting across public practice, commerce and industry, academe, and government, the literature largely focuses on technology adoption, operational efficiency, audit quality, institutional performance, and governance mechanisms rather than on how these changes influence the career preferences of accountancy students. In public accountancy, research emphasizes analytics-driven audits and digital competencies among practitioners but provides limited empirical evidence on how these developments shape students' perception of public practice as a preferred field (Escolano et al., 2025; Pamorca, 2023). Similarly, in commerce and industry, prior studies highlight the organizational benefits of AI, ERP systems, automation, and cloud-based accounting, particularly in private enterprises and MSMEs in the Philippines, yet there remains little evidence explaining whether awareness of these transformations affects students' preference for entering the private sector (Galang, 2024; Thim, 2025; Eduardo et al., 2024).

In the academic sector, the literature focuses on technology integration in curriculum design, cloud adoption in higher education, and the gap between educational outcomes and employer-required digital competencies, but it rarely examines how these conditions influence students' intention to pursue academe as a professional pathway (Alimboyong & Bucjan, 2021; Resol, 2022; Stroparo & Lemos, 2025; Cainas et al., 2024; Askary & Askarany, 2024; Lemon et al., 2024). Likewise, studies on government accounting highlight improvements in fiscal transparency, fraud detection, and digital governance enabled by emerging technologies, yet provide limited evidence on how these reforms shape the attractiveness of government practice among future accountants (Ummah & Sofyani, 2024; Almadadha, 2024; Tan et al.,

2022; Distor et al., 2021).

As these industry trends continue to redefine professional roles by increasing the demand for analytical, digital, and technology-oriented competencies, understanding how accountancy students interpret these transformations becomes essential for aligning accounting education with labor market demands. However, empirical research remains scarce in explaining how awareness of these changes influences students' scope of practice preference across the four major fields of the profession. Hence, there is a need to examine public accountancy, commerce and industry, academe/education, and government practice not only as employment sectors but also as career pathways whose attractiveness to accountancy students may be shaped by emerging industry trends.

Conceptual Framework

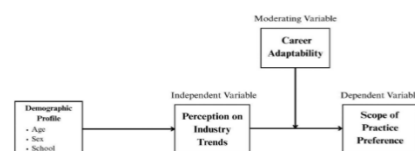


Figure 1. Conceptual Framework

This study presents a conceptual framework that organizes the key variables used to understand how industry trends influence accountancy students' preferences for the scope of practice. The respondents' demographic profile is included for descriptive purposes to provide context for the findings. The Perception of Industry Trends serves as the Independent Variable, reflecting respondents' awareness and assessment of Automation and AI, Blockchain, Cloud Computing, and Data Analytics. These trends represent major developments impacting the accounting profession and its future skill requirements. The Scope of Practice Preference is identified as the Dependent Variable, representing the career paths chosen by respondents among Public Practice, Commerce and Industry, Government, and Academe. Meanwhile, Career Adaptability serves as the Moderating Variable, determining whether students' adaptability—measured by the Career Adapt-Abilities Scale (CAAS)—influences or alters the relationship between their perception of industry trends and their scope-of-practice preferences. Overall, the framework highlights how demographic characteristics, perceptions of technological trends, and career adaptability interact to shape the career decisions of accountancy students.

The following are the hypotheses derived by the proponents of the study to help the development of the research results in a clear and structured way: **H01:** There is no significant relationship between the level of perception on industry trends and preference on public accountancy, commerce & industry, academe/education, and government.

H02: Career adaptability does not significantly moderate the relationship between the level of perceived industry trends and preferences for public accountancy, commerce & industry, academe/education, and government

METHODS

This study followed a step-by-step methodological process to show how the findings were generated. A quantitative descriptive correlational research design was used to examine the relationship between perceived industry trends and accountancy students' practice preferences. This design was chosen because it allows researchers to measure and

describe variables numerically and analyze their relationships without manipulating them (Hassan, 2023). A quantitative approach was used to provide objective, statistical evidence of these relationships. To collect the data, a structured survey questionnaire was developed, as surveys are efficient for gathering standardized information from a defined population and allow numerical responses to be analyzed statistically (Manjunatha, 2019). This approach created a clear, stepwise path: first, identifying variables and designing the instrument; second, collecting responses from the target population; and third, analyzing the data to examine the relationships and test the research hypotheses. Each step was deliberately linked to the study's objectives to ensure accuracy, transparency, and reproducibility.

After defining the research design, the target population was identified as 270 fourth-year Accountancy students from four universities in Manila: Centro Escolar University (20 students), Far Eastern University (120 students), San Beda University (10 students), and the University of Santo Tomas (120 students). To ensure the sample was large enough for reliable regression and moderation analyses, the sample size was calculated in two steps. First, Cochran's formula was applied to estimate the required sample for an infinite population, producing 385 respondents. This formula was chosen because it provides a statistically sound estimate of the minimum sample size needed to achieve a desired level of confidence and precision. Since the actual population was finite, the Finite Population Correction (FPC) was applied to adjust the estimate to reflect the true population size, resulting in a final sample of 159 respondents. This two-step process ensured that the sample was both representative of the population and adequate for statistical analyses, providing confidence that the results would accurately reflect the target group.

Guided by the study's conceptual framework, which suggested that students' perceptions of industry trends affect their career choices and that career adaptability can influence this effect, the variables were measured using a structured survey questionnaire. The questionnaire was designed in four sections, following a step-by-step path aligned with the research objectives. The first section collected demographic information to describe respondent characteristics. The second section measured students' perceptions of industry trends using a 4-point Likert scale, chosen to eliminate neutral answers and encourage clear responses, improving the accuracy of statistical analysis. The third section assessed career adaptability using an adapted 4-point Career Adapt-Abilities Scale Short Form (CAAS-SF), which measures Concern, Control, Curiosity, and Confidence. These dimensions were included because they relate to how students make career decisions and were expected to moderate the influence of industry trends on career choices. The fourth section asked students to rank career paths in Public Accountancy, Commerce and Industry, the Academe, and Government. Ranking was used instead of rating to clearly identify preferences, which justified the later use of ordinal logistic regression. Sections on industry trends and career preferences were created specifically for this study, while the adaptability section was adapted from the CAAS-SF to maintain theoretical grounding. Finally, the questionnaire was reviewed and validated by experts to ensure that the questions were clear, accurate, and aligned with the study's goals before administration to participants.

Data collection began after the questionnaire was validated by experts for clarity and relevance. Eligible fourth-year Accountancy students were identified through online platforms, and an invitation explaining the study and ethical safeguards was emailed. Informed consent was obtained to ensure confidentiality and voluntary participation. The questionnaire, administered via Google Forms, followed the same four sections used in design: demographics, perception of industry trends (4-

point scale), career adaptability (adapted 4-point CAAS-SF), and ranking of career paths in Public Accountancy, Commerce and Industry, the Academe, and Government. This structure allowed data to be collected systematically according to the research objectives. Data collection continued until the required sample of 159 students was reached. Responses were then compiled, checked for completeness, and prepared for statistical analysis, following a clear, step-by-step process to ensure accuracy, reliability, and alignment with the study framework.

After data collection, the responses were compiled and prepared for analysis. First, frequency and percentage distributions were calculated to summarize respondents' demographic profiles, perceptions of industry trends, career adaptability, and scope of practice preferences. This provided a clear overview of the sample and the key variables. Next, moderated regression analysis was conducted to test whether career adaptability changes the strength or direction of the relationship between industry trends and students' career preferences, following the conceptual framework that positioned adaptability as a moderating factor. Finally, ordinal logistic regression was used to analyze the ranked career paths, identifying which factors most influenced students' choices among Public Accountancy, Commerce and Industry, the Academe, and Government. Each method was selected to match the type of data and the relationships being tested, providing a systematic, step by step approach from describing the data to testing the hypothesized paths.

RESULTS

Table 1. Cronbach's Alpha

Variables	Cronbach Value	Interpretation
Overall	.928	Excellent
Automation	.811	Good
Blockchain Technology	.858	Good
Cloud Computing	.886	Good
Data Analytics	.880	Good
Career-Adaptability	.913	Excellent

Note: Cronbach's alpha interpretation is as follows: $\alpha \geq 0.9$ Excellent; $0.9 > \alpha \geq 0.8$ Good; $0.8 > \alpha \geq 0.7$ Acceptable; $0.7 > \alpha \geq 0.6$ Questionable; $0.6 > \alpha \geq 0.5$ Poor; $0.5 > \alpha$ Unacceptable

As shown in Table 1, Overall ($\alpha = 0.928$) and Career-Adaptability ($\alpha = 0.913$) are classified as having excellent internal consistency. Meanwhile, Automation ($\alpha = 0.811$), Blockchain Technology ($\alpha = 0.858$), Cloud Computing ($\alpha = 0.886$), and Data Analytics ($\alpha = 0.880$) are classified as having good internal consistency. Overall, all variables yielded acceptable Cronbach's alpha values, confirming that the gathered data are reliable and suitable for further statistical analysis.

Table 2. Demographic Profile of the Respondents (N = 108)

PROFILE	Frequency	Percentage	
Age	19 to 25 years old	108	100%
Sex	Male	27	25%
	Female	81	75%
School	Centro Escolar University	20	19%
	Far Eastern University	43	40%
	San Beda University	9	8%
	University of Santo Tomas	36	33%
TOTAL	108	100%	

As shown in Table 2, the demographic profile of the respondents is summarized by age, gender, and school affiliation. All 108 respondents (100%) were aged 19-25 years, with no participants in the below 18 or 26 and above age groups. 81 respondents (75%) comprised of females, while males accounted for 27 respondents (25%). Regarding school affiliation, 20 respondents (19%) were from CEU, 43 (40%) from FEU, 9 (8%) from SBU, and 36 (33%) from UST.

Table 3. Perception Level of Respondents on Industry Trends

Automation and AI	Mean	SD	Interpretation
1) The automation of accounting tasks influences how I plan my future career.	3.08	0.70	Agree
2) I consider how AI and automated systems may change the types of accounting work available.	3.22	0.59	Agree
3) The possibility of routine tasks being automated affects my career decisions.	2.95	0.74	Agree
4) I think about learning new skills to stay competitive in an automated and AI-driven work environment.	3.50	0.57	Strongly Agree
5) The growth of automation and AI in the accounting field influences my career path choices.	3.08	0.75	Agree
WEIGHTED MEAN	3.17	0.67	Agree
Blockchain Technology			
1) Developments in blockchain technology influence how I think about my future career	2.99	0.68	Agree
2) I consider the impact of blockchain on accounting practices when planning my career path.	2.92	0.67	Agree
3) Knowing that blockchain can change how transactions and audits are done affects my career decisions.	2.98	0.71	Agree
4) Awareness of blockchain innovations motivates me to explore different career options.	3.00	0.74	Agree
5) I feel that understanding blockchain technology is important in shaping my future career choices.	3.22	0.62	Agree
WEIGHTED MEAN	3.02	0.68	Agree
Cloud Computing			
1) The growing use of cloud-based systems in accounting influences how I plan my career.	3.12	0.69	Agree
2) I consider the impact of cloud technology on the accountancy profession when thinking about my career path.	3.16	0.67	Agree
3.) Awareness of cloud computing trends affects the type of work environment I prefer for my future career.	3.21	0.63	Agree
4) I believe that understanding cloud-based tools will be important for my future career success.	3.35	0.55	Strongly Agree
5) Developments in cloud computing encourage me to think about flexible and remote work possibilities.	3.37	0.57	Strongly Agree
WEIGHTED MEAN	3.24	0.62	Agree
Data Analytics			
1) The growing role of data analytics in the accountancy profession opportunities.	3.32	0.59	Strongly Agree
2) I consider developing data analytics skills as important when preparing for my future career.	3.44	0.55	Strongly Agree
3) Awareness of the importance of data-driven decision-making affects my career choices	3.36	0.59	Strongly Agree
4) I believe that learning data analytics will be important for my future career success.	3.45	0.60	Strongly Agree
5) The rise of data analytics in the profession encourages me to explore different career paths.	3.21	0.72	Agree
WEIGHTED MEAN	3.36	0.61	Strongly Agree

As shown in Table 3, the respondents reported generally high perceptions of industry trends in the accounting profession, with weighted means ranging from 3.02 to 3.36. Automation and AI were rated Agree (WM = 3.17). Blockchain also received an Agree interpretation (WM = 3.02). Cloud Computing was rated Agree as well (WM = 3.24), ranking second highest. The highest rating was given to Data Analytics (WM = 3.36, Strongly Agree), making it the highest-scoring item.

Table 4. Level of Career Adaptability based on Career Adapt-abilities Scale (CAAS)

Career Concern	Mean	SD	Interpretation
Thinking about what my future will be like	3.63	0.54	Very Strong
Preparing for the future	3.56	0.59	Very Strong
Becoming aware of the educational and vocational choices that I must make	3.55	0.59	Very Strong
WEIGHTED MEAN			Very Strong
Career Control			
Making decisions by myself	3.41	0.66	Very Strong
Taking responsibility for my actions	3.67	0.49	Very Strong
Counting on myself	3.49	0.62	Very Strong
WEIGHTED MEAN	3.52	0.59	Very Strong
Career Curiosity			
Looking for opportunities to grow as a person	3.69	0.56	Very Strong
Investigating options before making a choice	3.56	0.57	Very Strong
Observing different ways of doing things	3.57	0.53	Very Strong
WEIGHTED MEAN	3.61	0.55	Very Strong
Career Confidence			
Taking care to do things well	3.56	0.52	Very Strong
Learning new skills	3.57	0.58	Very Strong
Working up to my ability	3.66	0.51	Very Strong
WEIGHTED MEAN	3.60	0.54	Very Strong

As shown in the table, the respondents demonstrated an extreme level of career adaptability, with weighted means ranging from 3.52 to 3.61. Among the dimensions, Career Curiosity had the highest mean (WM = 3.61), making it the highest-scoring dimension. This was closely followed by Career Confidence (WM = 3.60). Career Concern also showed an extreme result (WM = 3.58). The lowest dimension, though still very strong, was Career Control (WM = 3.52).

Table 5. Respondents' Ranking of Scope of Practice

Variables	Rank	Frequency	Percentage
Public Accountancy	1	38	36%
	2	21	19%
	3	21	19%
	4	28	26%
Commerce & Industry	1	25	23%
	2	38	35%
	3	34	32%
	4	11	10%
Academe/ Education	1	27	25%
	2	16	15%
	3	19	17%
	4	46	43%
Government Accounting	1	18	17%
	2	33	31%
	3	34	31%
	4	23	21%

As shown in Table 5, the respondents' preferred scope of practice in the accounting profession varies across four fields. Public Accountancy was the most preferred, with 38 respondents (36%) ranking it as their first choice. Commerce and Industry followed closely as the second most preferred, with 38 respondents (35%) selecting it as their second choice. Government Accounting ranked third, with 34 respondents (31%) choosing it as their third preference. The least preferred was Academe/Education, with 46 respondents (43%) assigning it as their fourth choice.

Table 6. Ordinal Logistic Regression Analysis

Preference	Z-value	Estimate(β)	Odds ratio	p-value	Decision	Conclusion
Academe	-3.41	-0.076	0.93	<.001	Reject Ho	Significant
Commerce & Industry	1.72	0.035	1.04	0.086	Do not Reject Ho	Not Significant
Government	-0.47	-0.009	0.99	0.641	Do not Reject Ho	Not Significant
Public Accountancy	2.66	0.056	1.06	0.008	Reject Ho	Significant

Note: Significant at 5% level

As shown in Table 6, the ordinal logistic regression analysis assessed the impact of Industry Trends on students' preferred scope of practice

across Academe, Commerce & Industry, Government, and Public Accountancy. The most notable relationship was found in Public Accountancy, which exhibited a significant positive effect ($\beta = 0.056$, OR = 1.06, $p = 0.008$). Conversely, Academe displayed a significant adverse effect ($\beta = -0.076$, OR = 0.927, $p < 0.001$). Commerce & Industry showed a positive but borderline significant effect ($\beta = 0.035$, OR = 1.036, $p = 0.086$). Government Accounting revealed a small and non-significant relationship ($\beta = -0.009$, OR = 0.991, $p = 0.641$).

Table 7. Moderation Estimates of CAAS between Industry Trends and Academe

Variables	Estimate	Z	p-value	Decision	Conclusion
Industry trends	-0.039	-2.998	0.003	Reject Ho	Significant
CAAS	-0.025	-1.119	0.263	Do not Reject Ho	Not Significant
Trends*C	-0.003	-0.932	0.352	Do not Reject Ho	Not Significant
AAS				Reject Ho	Significant

As shown in Table 7, the moderated regression analysis assessed whether the Career Adapt- Abilities Scale (CAAS) moderates the relationship between Industry Trends and students' preference for the Academe sector. The results show that Industry Trends significantly and negatively predict preference for Academe (Estimate = -0.039, $p = 0.003$). In contrast, CAAS (Estimate = -0.025, $p = 0.263$) and the interaction term between Industry Trends and CAAS (Estimate = -0.003, $p = 0.352$) were not statistically significant.

Table 8. Moderation Estimates of CAAS between Industry Trends and Commerce & Industry

Variables	Estimate	Z	p-value	Decision	Conclusion
Industry trends	0.018	1.770	0.077	Do not Reject Ho	Not Significant
CAAS	0.0001	0.009	0.993	Do not Reject Ho	Not Significant
Trends*C	-0.002	-0.594	0.553	Do not Reject Ho	Not Significant
AAS				Reject Ho	Significant

As shown in Table 8, the moderation analysis examined whether the Career Adapt-Abilities Scale (CAAS) influences the relationship between Industry Trends and students' preference for the Commerce & Industry sector. The results indicate that none of the predictors were statistically significant. Industry Trends displayed a marginal positive effect (Estimate = 0.018, $p = 0.077$), indicating a weak, non-significant impact on students' preferences. CAAS alone was not significant (Estimate = 0.0001, $p = 0.993$). Furthermore, the interaction term between Industry Trends and CAAS was not significant (Estimate = -0.002, $p = 0.553$), providing no evidence of a moderating effect.

Table 9. Moderation Estimates of CAAS between Industry Trends and Government

Variables	Estimate	Z	p-value	Decision	Conclusion
Industry trends	-0.002	-0.151	0.880	Do not Reject Ho	Not Significant
CAAS	-0.003	-0.141	0.888	Do not Reject Ho	Not Significant
Trends*C	-0.003	-1.108	0.268	Do not Reject Ho	Not Significant
AAS				Reject Ho	Significant

As shown in Table 9, the moderated regression analysis investigated whether the Career Adapt- Abilities Scale (CAAS) moderates the relationship between Industry Trends and students' preferences for the government sector. The results indicate that none of the predictors were statistically significant. Industry Trends demonstrated a small adverse effect (Estimate = -0.002, $p = 0.880$). CAAS alone also had a negligible effect (Estimate = -0.003, $p = 0.888$). Furthermore, the interaction term between Industry Trends and CAAS was not significant (Estimate = -0.003, $p = 0.268$).

Table 10. Moderation Estimates of CAAS between Industry Trends and Government

Variables	Estimate	Z	p-value	Decision	Conclusion
Industry trends	0.022	1.75	0.081	Do not Reject Ho	Not Significant
CAAS	0.028	1.25	0.211	Do not Reject Ho	Not Significant
Trends*C	0.008	2.39	0.017	Reject Ho	Significant
AAS				Reject Ho	Significant

As shown in Table 10, the moderated regression analysis investigated whether the Career Adapt- Abilities Scale (CAAS) moderates the relationship between Industry Trends and students' preference for the Public Accountancy sector. The direct effects of Industry Trends (Estimate = 0.022, $p = 0.081$) and CAAS (Estimate = 0.028, $p = 0.211$) were not statistically significant. In contrast, the interaction term between Industry Trends and CAAS was statistically significant (Estimate = 0.008, $p = 0.017$).

DISCUSSION

The demographic profile of the respondents reflects a relatively homogeneous cohort of emerging accounting professionals, composed entirely of students aged 19 to 25 and predominantly female. This distribution aligns with broader enrollment trends in accountancy programs where female representation has steadily increased. The inclusion of participants from four major universities that offer the Bachelor of Science in Accountancy program, namely, Centro Escolar University, Far Eastern University, San Beda University, and University of Santo Tomas, provides institutional diversity, allowing the findings to reflect perspectives across different academic environments within Manila. While demographic variables were not central predictors in the model, this profile contextualizes the findings within a generation of students currently preparing to enter a technology-driven accounting profession.

Consistent with the rapid digital transformation of the accounting field, respondents demonstrated a high level of awareness of emerging industry trends, particularly in Data Analytics, followed by Cloud Computing, Automation and AI, and Blockchain. The strong awareness of Data Analytics suggests that students recognize analytical competence as a critical professional asset, echoing prior studies emphasizing the centrality of data-driven decision-making in modern accounting practice. Existing literature has highlighted how AI, robotic process automation, blockchain, and cloud-based systems are redefining efficiency, transparency, and forecasting capabilities in organizations (e.g., Hamza et al., 2024; Kavyashree et al., 2022; Perdana et al., 2023; Al-Kasasbeh et al., 2023). The present findings reinforce these arguments by demonstrating that students are not merely aware of these technologies but perceive them as influential in shaping their career preparation. This supports the study's premise that industry trends function as external environmental forces that aid professional identity formation and career planning among accountancy students.

Similarly, respondents exhibited very high levels of career adaptability across the four dimensions of the Career Adapt-Abilities Scale, which are concern, control, curiosity, and confidence. The particularly strong ratings for curiosity and confidence suggest that students are actively exploring career possibilities while maintaining belief in their capacity to acquire emerging competencies. These findings align with earlier research by Francisco and Castaño (2020) linking career curiosity and confidence to exploratory job-search behaviors and openness to diverse professional pathways. Within the context of this study, career adaptability appears to function as an internal psychological resource that equips students to navigate technological changes and evolving labor market demands. Together with their high perception of industry trends, this indicates that respondents are both externally aware and internally prepared to engage with the dynamics of the accounting profession.

Despite high awareness of technological developments, students' scope of practice preferences reveal a differentiated pattern across sectors. Public Accountancy emerged as the most preferred career path, followed closely by Commerce and Industry, while Government Accounting and Academe were less favored. These rankings suggest that students gravitate toward sectors perceived as dynamic, opportunity-rich, and responsive to innovation. Traditional auditing and

assurance roles remain attractive, but the preference for Public Accountancy may no longer be driven solely by tradition; rather, it appears increasingly associated with exposure to advanced technologies and global standards. The regression analysis provides deeper insight into how industry trends shape these preferences. A significant positive relationship was found between perception of industry trends and preference for Public Accountancy, indicating that students who recognize the relevance of technological and regulatory developments are more likely to choose this field. This finding aligns with research demonstrating how Big Data enhances audit quality (Yadav, 2020) and how cloud computing improves operational efficiency and flexibility in audit practice (Ali et al., 2024). Public practice firms are often early adopters of innovation due to competitive pressures and global integration, which may explain why students perceive this sector as aligned with emerging competencies. The present study extends prior literature by empirically demonstrating that students' awareness of technological changes translates into stronger inclination toward sectors that visibly integrate these innovations.

In contrast, perception of industry trends showed a significant negative relationship with preference for Academe. This suggests that students who are more conscious of technological transformation are less inclined to pursue academic careers. This finding is consistent with prior research indicating that accounting education continues to rely heavily on theoretical instruction and faces challenges in integrating emerging technologies into curricula (Abitoye et al., 2023; Alimboyong & Bucjan, 2021). Montgomery (2022) emphasized the need to modernize accounting programs to better align with industry standards. The present results provide student-level evidence supporting these concerns, implying that perceived misalignment between academe and industry trends may discourage students from considering academic careers. This contributes to the literature by linking curricular modernization gaps directly to career preference outcomes.

For Commerce and Industry, the relationship with industry trends was positive but not statistically significant, suggesting that while students recognize the sector's adaptability to AI, RPA, and data analytics, other factors, such as job stability, compensation, and career progression, may exert stronger influence on their decisions. Similarly, Government Accounting showed no significant association with industry trends, reinforcing prior arguments that public-sector institutions are more compliance-oriented and slower in adopting technological innovations due to regulatory and infrastructural constraints (Kowalczyk & Napiecek, 2023; Almadadha, 2024). These results indicate that industry trends do not uniformly influence career preferences; rather, their impact depends on how visibly and rapidly each sector integrates technological change.

The moderation analysis indicated that career adaptability did not influence the relationship between industry trends and student preference for the Academe, Commerce and Industry, or Government sectors. For these sectors, either industry trends had a direct impact as seen with Academe or neither variable was a significant predictor of preference. However, a significant moderating effect was found for Public Accountancy. Individually, industry trends and career adaptability were not strong predictors, but their interaction significantly predicted students' preference for public practice. This suggests that students with higher levels of the career adaptability dimensions concern, control, curiosity, and confidence are more sensitive and responsive to industry developments when considering Public Accountancy as a career. In essence, adaptable students are better able to translate their awareness of technological changes into a proactive career choice within sectors, like Public Accountancy, that value innovation and continuous skill development.

This finding advances existing research by integrating external environmental factors (industry trends) with internal psychosocial resources (career adaptability) in explaining professional preference

formation. It suggests that technological awareness alone does not uniformly shape career decisions but its influence is amplified when students possess adaptive capacities that enable them to perceive change as opportunity rather than uncertainty. Particularly in Public Accountancy, where innovation, regulatory changes, and global competitiveness are evident, career adaptability strengthens the alignment between perceived industry transformation and career intention.

Overall, the study demonstrates that industry trends exert sector-specific effects on accountancy students' scope of practice preferences and that career adaptability plays a conditional role, most notably within Public Accountancy. These findings underscore the importance of aligning accounting education with technological advancements and fostering adaptive competencies among students. By empirically linking technological perception, adaptability, and sectoral preference, the study contributes to a more integrated understanding of how future accountants navigate an evolving professional landscape.

CONCLUSION

This study aimed to identify the significant relationship between accountancy students' perceptions of emerging industry trends and their practice preferences. Additionally, the Career Adapt-Abilities Scale – Short Form (CAAS-SF), developed by Maggiori, Rossier, and Savickas (2017), was adapted to assess respondents' career adaptability in the accountancy field and to determine whether it significantly moderates the relationship between the identified variables.

Findings revealed that all respondents were between 19 and 25 years old. About 75% of the participants were women, and 39.8% were currently enrolled at Far Eastern University (FEU). Furthermore, respondents showed a high level of awareness of emerging industry trends, particularly Automation and AI, Blockchain, Cloud Computing, and Data Analytics, which they considered influential factors shaping the accountancy profession and their career planning.

Students also demonstrated a very high level of career adaptability across the dimensions of curiosity, concern, control, and confidence. This shows they are well-prepared to handle transitions in the accounting field, adapt to technological changes, and pursue long-term professional growth. Public Accountancy was the most popular choice among students, with 36% ranking it as their top preference, probably because of its professional prestige and opportunities for advancement. In contrast, Academe/Education was the least favored sector, with 43% ranking it last, reflecting perceived barriers like high qualification requirements and limited access to modern technological tools in academic environments.

The results also showed that students' awareness of industry trends affects their practice preferences, although this influence varies across different sectors. Awareness of industry trends has a significant positive relationship with preference for Public Accountancy ($\beta = 0.056$, $p = .008$) and a significant negative relationship with preference for Academe ($\beta = -0.076$, $p < .001$). However, the positive impact on Commerce and Industry ($\beta = 0.035$, $p = .086$) and the negative impact on Government Accounting ($\beta = -0.009$, $p = .641$) were not statistically significant.

Another salient point to consider is that moderation analysis showed that career adaptability does not significantly influence the relationship between industry trends and the preference for most practice areas. This indicates that, although students are very adaptable, other factors, such as job security, salary prospects, or prior academic and internship experience, may have a more significant impact on their preferences. However, it significantly influenced the relationship between industry trends and the preference for Public Accountancy, suggesting that

students with greater adaptability are more responsive to technological advancements when considering careers in this sector.

Understanding the influence of industry trends on accountancy students' preferred areas of practice has significant implications for research, practice, and theory. This study provides empirical evidence on how technological trends shape career choices, an area that remains underexplored in the Philippine context. Additionally, this study offers practical insights for academic institutions, firms, and professional organizations. By identifying which industry trends most strongly influence students' decisions, the study helps educators adjust curricula and career guidance programs to focus on skills that match students' changing interests and industry demands.

For accounting firms and industry practitioners, the findings highlight areas where students are more open to technological advancements, guiding recruitment strategies, internship programs, and training initiatives. From a theoretical perspective, this study supports the use of the Career Adaptability Theory to understand how accounting students respond to industry changes. The results indicate that adaptability traits such as concern, curiosity, control, and confidence interact with industry trends, but their impact varies across career paths. Adaptability influenced career choices only in Public Accountancy, suggesting it does not always shape students' reactions to trends. This adds depth to existing theoretical models, implying that adaptability affects decision-making in specific domains rather than in broad, generalized ways.

Overall, this study not only identified the industry trends that accountancy students perceive as most influential, but more importantly, demonstrated that awareness of these emerging technological developments significantly shapes their professional direction, particularly toward Public Accountancy. By integrating technological trend awareness with career adaptability within a single analytical framework, this research provides new empirical insight into how future accountants navigate an evolving professional landscape. The findings highlight that career decision-making among accountancy students is no longer driven solely by traditional considerations such as prestige or stability, but is increasingly influenced by perceptions of technological transformation within the profession. As the accounting industry continues to undergo rapid digitalization, this study offers a timely and relevant foundation for curriculum enhancement, policy development, and further scholarly inquiry into technology-driven career preferences in the Philippine context.

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Guide to Contributors

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The editors recommend that manuscripts conform to the following guidelines:

1. Manuscripts should be endorsed by their respective research advisers together with the consent from the student researchers.
2. Authors should submit two versions of the manuscript. One file (“file not for review”) should include the names of the authors (adviser and student/s), their contact information (e-mail addresses), and current affiliation (program/area and college). The other file (“file for review”) should remove any information that would identify the authors.
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4. The article should contain approximately 6000 – 7000 words (including abstract, tables/figures, and references) and should be typed in a 12-point font, Garamond, double-spaced, with one-inch margin on all sides.
5. Tables/figures and references should follow the APA format style. Table titles are placed above while figure titles are placed below.
6. Reference should follow the APA format style.
7. The editors prefer to have the file in Microsoft Office Word 97-2003 Document (.doc) format and should be sent to antorcha.research@letran.edu.ph.
8. Manuscripts that are already published or in the process of publication in other journals will not be considered in the Letran Business and Economic Review.

Review Process

1. The editor screens the submitted manuscripts and selects those deemed suitable for peer reviewing. Selected articles then undergo a rigorous double-blind refereeing.
2. Once accepted, a Copyright Agreement will have to be sought from the student researchers and their research adviser.
3. Attached with the letter of acceptance are the comments and suggestions from the members of the editorial board. Revisions should be incorporated and returned to the Center within 2 weeks.
4. The editor makes the final decision on the publication of the revised articles.

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