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AI CHATBOTS INTEGRATION IN ONLINE SHOP IN NUEVA ECIJA, PHILIPPINES: STUDY UTILIZING THE EXPECTATION CONFIRMATION THEORY AND ISO/IEC 25010 CRITERIA

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Abstract— **Artificial Intelligence (AI) is transforming E-commerce by enhancing customer relations. In the Philippines, where E-commerce is growing rapidly, understanding the impact of AI integration on online shops is crucial. This study explores consumer satisfaction and acceptance of AI chatbots in online shops, using Expectation Confirmation Theory and ISO/IEC 25010 criteria to evaluate user experience. The study aims to provide insights for E-commerce businesses to optimize AI adoption and improve customer engagement. A self-made questionnaire was employed as the primary data collection tool, with 392 respondents selected through simple random sampling. Findings indicate that online shoppers' expectations align with their current experiences with AI chatbots, as evidenced by positive evaluations of functional suitability, performance efficiency, and usability. These results encourage continued use of AI chatbots, highlighting their effectiveness in addressing customer queries promptly and accurately. The study also notes emerging trends in the online marketplace, with growing demand for toys and baby products, while Fashion, Beauty, and Personal Care items remain dominant. AI chatbots are shown to enhance user experience, making them a strategic asset for E-commerce businesses in the Philippines. Leveraging these insights, businesses can better align with consumer needs and stay competitive in the evolving market.**

Keywords— **E-Commerce, AI Chatbots, Emerging Industry Online, ISO/IEC 25010, Online Shopping Experience**

I. INTRODUCTION

The rapid evolution of Artificial Intelligence (AI) over the past decade has fundamentally transformed various sectors, particularly in customer service. Artificial Intelligence (AI) has witnessed unprecedented growth over the past decade, with the global AI market expected to surge from $4,065.0 million in 2016 to $169,411.8 million by 2025, driven by a Compound Annual Growth Rate (CAGR) of 55.6% from 2018 to 2025 (Department of Science and Technology, 2021). The user of AI chatbots improves their performance in speaking and learning process (Kim et.al., 2021). Artificial intelligence chatbots, with their potential to transform education institutions, e-commerce and many other industries in a multitude of ways, recently surprised the world (Labadze et.al. 2023). This rapid expansion emphasizes the transformative potential of AI across various industries, including e-commerce, where AI chatbots have become an essential tool for enhancing customer service. Chatbots that use artificial intelligence (AI) have become more popular since 2022. Chatbots that use artificial intelligence (AI) are becoming more and more common in the classroom. A large number of empirical research have examined the impact of AI chatbots on students' learning outcomes as a result of their growing popularity (Wu and Yu 2023). Driven by big data, natural language processing (NLP), and machine learning (ML) algorithms, they present opportunities to broaden capacities, enhance efficiency, and offer direction and assistance across multiple fields (Balcombe 2023).

In the Philippines, the adoption of Information and Communication Technology (ICT) has been essential in developing innovations that enhance the country's competitiveness in the global market. The chatbots powered by AI are a potentially revolutionary technology (Farazouli et.al. 2023). Artificial intelligence (AI) chatbot services have become a useful tool for firms to communicate with customers as contactless purchasing has grown in popularity (Kim and Hur 2023). Although AI-chatbots are a relatively new technology in the travel and hospitality sectors, not much is known about how they are used (Rafiq et.al., 2022). As the nation contributes approximately 16–18% of the world's outsourcing services market, particularly in financial services, telecommunications, and business process outsourcing (BPO) (Department of Science and Technology, 2021), integrating AI technologies like chatbots could further strengthen these

industries. Numerous companies have built chatbots and used them as their preferred channel of interaction and communication with consumers (Li et.al., 2023). Artificial intelligence (AI) chatbots give strong evidence of their transformative potential in promoting efficient communication, improving engagement, and providing prompt support (Antony and Ramnath 2023). The Department of Trade and Industry (DTI) aims to maintain and expand the Philippines' market share in the IT-BPM sector, anticipating a doubling of global market demand by 2022 (Department of Science and Technology, 2021). When it comes to employing chatbots for customer support, the most important aspects are responding to relevance and problem resolution. These factors typically lead to greater customer satisfaction, a higher likelihood of continued chatbot usage, product purchases, and product recommendations (Nicolescu and Tudorache 2022).

Globally, AI chatbots have revolutionized customer interactions in online shopping, offering personalized assistance and streamlined communication. The AI Chatbots offers a variety of benefits for its user such as personalization and on demand learning (Calonge et.al., 2023). In the study of Qian Chen et.al. 2023, shows a result that AI chatbot service quality positively affects customer loyalty through perceived value, cognitive trust, affective trust and satisfaction. Also, in Ruan and Mezei 2022, presents a result that AI chatbots perform better than Human-Frontline Employees (HFLEs) when the product attribute is functional. Studies have demonstrated their efficacy in boosting business performance; for instance, 63% of companies reported increased revenues after implementing AI, and 55% noted an improvement in lead quality due to chatbots (Mckinsey.com, 2020; Meltwater.com, 2023). It has been discovered that empathy reaction has the biggest impact on engagement. Meanwhile, it was discovered that anonymity and empathic response had an indirect impact on consumers' trust in AI chatbots (Nguyen et.al., 2023). These findings highlight the strategic importance of AI chatbots in enhancing customer relations and service delivery in the digital marketplace. Further, as front-line agents, AI chatbots provide novel ways to customize service offers that are advantageous to both clients and shops (Chong et.al., 2021).

Despite the promising potential of AI chatbots, their adoption in the Philippine online shopping market remains limited. There are also studies showing that AI chatbots are not reliable and credible yet for generating knowledge (Chaka 2023). While online shopping has grown exponentially, with 51.47 million e-commerce users in 2023 projected to reach 60.41 million by 2027 (Statista.com, 2023), the use of AI chatbots in customer service is not yet widespread. Previous research has predominantly focused on the technical capabilities of AI chatbots and their impact on business metrics in developed markets (Hoyer et al., 2020; Ruan & Mezei, 2022), with limited exploration of consumer perceptions and satisfaction in emerging markets like the Philippines.

The novelty of this research lies in its focus on the Philippine market, which has been underrepresented in the existing literature. By examining the specific factors that shape consumer perceptions and attitudes towards AI chatbots in online shopping, this study provides valuable insights for businesses seeking to optimize their chatbot functionalities to meet the evolving needs and preferences of Filipino consumers.

While AI chatbots have been extensively studied in the context of developed markets, there is a notable lack of research exploring their impact on customer satisfaction and loyalty in emerging markets like the Philippines. This study aims to fill this gap by providing a comprehensive analysis of AI chatbot adoption in the Philippine e-commerce sector, offering a deep understanding of consumer behavior and contributing to the broader discourse on AI in customer service. Employing the Expectation Confirmation Model (ECM), this research will explore consumer expectations, satisfaction levels, and the perceived usefulness of AI chatbots. By applying ECM, the study objectives to assess whether the performance of AI chatbots aligns with consumers' initial expectations and how this alignment influences overall satisfaction and continued use of this revolutionizing tool. The findings will be a basis for strategies in enhancing customer engagement and satisfaction, ultimately driving business growth in the rapidly expanding Philippine online shopping market.

Generally, the study aims to determine the perceptions of Pilipino markets in the new emerging AI Chatbots in Online shopping using the Expectation Confirmation Model (ECM). Specifically, it sought to answer the following; Demographic profile of the respondents, Customer Expectation in AI Chatbots, and the Perceived Effectiveness of AI Chatbots based on the ISO/IEC 25010 criteria,

II. PROPOSED ALGORITHM

The researchers used a descriptive-quantitative research design to bridge the gap between the expectations and the actual perception of the customer after they experience using the AI Chatbots in online shopping. When it comes to examining big populations and extrapolating findings from the sample under study to larger populations, quantitative methodologies excel (E. Halton and M. Burnett, 2005). A self-made questionnaire was used to gather the data. Random sampling technique was utilized to identify the respondents for the study. A total of 392 online shoppers were ask about their expectations and experience about the AI Chatbots. ISO/IEC 25010 were utilized to examine the acceptability of the function, performance, and usability of the online shoppers based on their experience.

The study was conducted at the Nueva Ecija, Philippines. It was one of the big Provinces in the Central Luzon.

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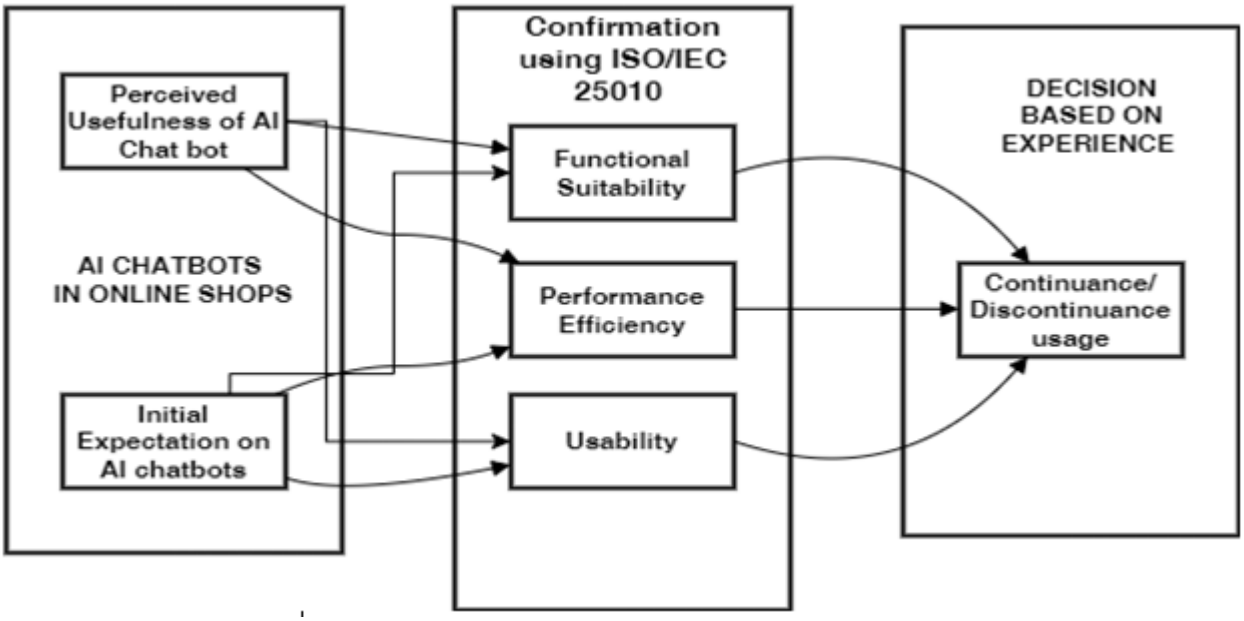

Fig. 1 Expectation-Confirmation Model for AI Chatbots in Online Shops

The framework presented in the figure 1 offers a comprehensive approach to understanding the factors that influence the continuance or discontinuance of AI chatbots in E-commerce, particularly within the context of online shopping. It begins by recognizing that users enter the interaction with AI chatbots with Initial Expectations regarding how the technology should function and the benefits it should provide. These expectations are shaped by previous experiences, marketing messages, and general knowledge about AI technologies. At the same time, users also have a Perceived Usefulness of AI chatbots, which refers to their belief in the chatbot's ability to enhance their online shopping experience by making it more efficient, personalized, and convenient. It can also be seen in the study of Youn and Cho 2023, a findings about the intention and attitude of using the AI chatbots apps.

As users interact with the chatbot, their initial expectations and perceived usefulness are put to the test. The framework proposes that this testing phase is where the Confirmation occurs, using the ISO/IEC 25010 standards as a measure. Specifically, the product quality model assesses the chatbot's Functional Suitability, Performance Efficiency, and Usability. If the AI chatbot meets or exceeds the users' expectations based on these quality criteria, it leads to a positive confirmation. This positive confirmation significantly influences the user's decision to continue using the chatbot. Conversely, if the chatbot fails to meet these expectations, users may choose to discontinue its usage.

Overall, this framework effectively integrates both psychological aspects, as outlined in the Expectation Confirmation Theory (expectations and perceived usefulness), and technical aspects, using the ISO/IEC 25010 quality standards, to explain the factors that drive the continued use or abandonment of AI chatbots in online shopping. The framework is also supported by a recent study of Zhu et.al., 2022, Customers view AI chatbots as more effective when demands are more certain, which eventually encourages customers to accept AI chatbots. By incorporating these elements, the framework emphasizes the importance of aligning the chatbot's actual performance with user expectations, ensuring long-term user engagement and satisfaction.

III. EXPERIMENT AND RESULT

This section of the study discussed the result of the data collected for the AI Chatbots in Online Shopping.

Profile of the Respondents

The data presented below shows the different profile of the study that contribute significant data to bridge the gap**.**

Demographic Profile

The data presented below shows the demographic profile of the respondent.

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Table 1
Demographic Profile

No.	Category	Frequency	Percentage
Age			
1	18 - 25	344	87.76%
2	26 - 35	45	11.48%
3	36 AND ABOVE	3	0.77%
	TOTAL	**392**	**100.00%**
Sex			
1	MALE	144	36.73%
2	FEMALE	248	63.27%
	TOTAL	**392**	**100.00%**
Online Shopping Apps (all that applies)			
1	Shopee	384	41.03%
2	Lazada	200	21.37%
3	Facebook App	48	5.13%
4	Tiktok App	296	31.62%
5	Shein	8	0.85%
	Total	**936**	**100.00%**
Frequency of Online Shopping Purchased			
1	2 times a week and below	272	69.39%
2	3 – 5 times a week	96	24.49%
3	6 times a week and above	24	6.12%
	Total	**392**	**100.00%**

The table shows the frequency of online shopping by age, gender, and online shop applications used by the respondents Nueva Ecija, Philippines. Looking at the age demographic, young adults aged 18-25 represent the largest group of online shoppers with 344 Frequency or 87.76% of the total respondents, followed by those aged 26-35 with 45 Frequency or 11.48% of the total respondents and those 36 and above only have 3 Frequency or 0.77% of the total respondents. For the Sex demographic, Females have a frequency of 248 or 63.27% of the total respondents in shop online this is more than males with a frequency of 144 or 36.73% of the total respondents. The most popular online shopping app for the respondents is Shopee with 384 frequency or 41.03% of the total responses, followed by Tiktok with a frequency of 296 or 31.62% of the total responses, Lazada only placed third among the different online shop with a frequency of 200 or 21.37% of the total responses, this is followed by Facebook with a frequency of 48 or 5.13% of the total responses, and Shein has a frequency of 8 or 0.85% of the total responses. In terms of frequency of purchased, most shoppers have purchased shop online two times a week or less with a frequency of 272 or 69.39% of the total respondents, while the 96 of the respondents or 24.49% purchased 3-5 times a week, and 6.12% shop six times a week or more.

This data suggests that online shopping is popular and a trend in the Nueva Ecija Philippines, particularly among young adults (Echeverri et al., 2020). The dominance of Shopee and Tiktok as shopping apps reflects the growing importance of social media and mobile platforms in e-commerce specially when it is integrated with AI chatbots. Unlike traditional chatbots that primarily rely on pre-defined rules and logic, AI-Chatbots can handle complex queries and follow-up conversations (Tam et.al., 2023). The fact that most shoppers only shop online a few times a week suggests that online shopping is used to supplement traditional in-person shopping, rather than replace it altogether. The data implied that businesses must, first, should focus on marketing to young adults. Second, they should consider using social media platforms and mobile apps to reach more customers. Finally, they should recognize that online shopping is likely to be used for occasional purchases, rather than frequent ones in the Nueva Ecija, Philippines, thus a combination of traditional brick and mortar and online shop is the most strategic business model for business targeting young adults. A positive social commerce constructs will decrease the perception of risks between customers when shopping online (Abou Ali, et.al., 2020).

Common Commodity bought Online

The table below shows the data about the common commodity bought online by the respondents.

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Table 2.
Common Commodity Bought Online

No.	Category	Frequency	Percentage	Rank
Common Commodity bought Online				
1	**Electronics**	208	18.57%	**3**
2	**Fashion**	344	30.71%	**1**
3	**Home & Living**	136	12.14%	4
4	**Beauty & Personal Care**	232	20.71%	**2**
5	**Baby & Toys**	24	2.14%	7
6	**Health & Wellness**	104	9.29%	5
7	**Sports & Outdoors**	72	6.43%	6
w	**Total**	**1120**	**100.00%**	

The table shows the results of a survey on the most common commodities bought online by respondents. The Fashion products has a percentage of 30.71% and a 344 frequency which is the rank 1 category selected by the respondents, followed by Beauty and Personal Care product with a percentage of 20.71% and a frequency of 232 and rank 2 category selected by the respondents. The third rank was the Electronics with a percentage of 18.57% and a frequency of 208 selected by the respondents. The Home and living products rank 4 with a 12.14% and a frequency of 136 selected by the respondents, this is followed by Health and wellness products with 9.29% and a frequency of 104 selected by the respondents that makes it rank 5, the last 2 rank were the Sports and Outdoors product rank 6 with a percentage of 6.43 and a frequency of 72 selected by the respondents, the last, rank 7 was the Baby and Toys with 2.14% and 24 frequency selected by the respondents.

This data presents a growing consumer comfort level with online shopping for a wider variety of products. Different dimensions and detailed category may also considered to address the needs and achieved customer satisfaction (Tao and Kim, 2022). Traditionally, online purchases were more common for categories like books and music. However, the current data indicates a shift towards a broader range of goods, including electronics and personal care items.

This trend has significant implications for businesses. The dominance of fashion, beauty, and electronics in online purchases emphasizes the importance of a strong online presence for retailers in these industries (Quelch & Klein, 2018). They should prioritize user-friendly shopping experiences and competitive pricing strategies to capitalize on this growing online market.

The rise of e-commerce platforms has undeniably contributed to the convenience and accessibility of online shopping. Consumers benefit from a wide selection of products at competitive prices, readily available from their homes (Statista.com, 2023). This trend aligns with the continuous evolution of e-commerce, where platforms constantly innovate and expand their offerings to meet consumer needs.

Furthermore, the data suggests potential for other industries beyond the top three categories. Such as Home and living with a frequency of 136 and 12.14%, of the total respondents. Health and Wellness with 104 frequency and 9.29% of the total respondents, sports and outdoors with 72 frequency or 6.43% of the total responses and even baby and toy products with a frequency of 24 or 2.14% of the total responses all show a presence in online shopping. This trend presents an opportunity for businesses in these industries to develop strong e-commerce platforms and cater to the evolving needs of online consumers. Moreover, The retailers can leverage the data mining approach of this study for their online CRM marketing platforms (Chiang, 2018).

Customer Expectation in AI Chatbots in terms of;

The data below presents the different AI Capabilities Expected by the Customers

Addressing Concerns/Problem Solving;

Table 3.
Expectation of User in AI Chatbots in Addressing Concerns/Problem Solving

Addressing Concerns/Problem Solving of Customers.			
No.	**Indicator**	**Average Weighted Mean**	**Verbal interpretation**
1	AI Chatbots is expected to provide precise answers to questions.	3.16	Expected
2	I appreciate AI Chatbots responding specifically to concerns, such as providing the exact location of a product order	3.16	Expected

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3	I expect AI Chatbots to handle decisions or address concerns regarding returns and exchanges of products.	2.92	Expected
4	It is beneficial if AI Chatbots can respond promptly whenever there is a need to inquire about a product or clarify information.	3.35	Highly Expected
5	Having AI Chatbots make recommendations when facing difficulty choosing between two products would enhance the shopping experience	3.08	Expected
Total Average Weighted Mean		3.13	Expected

Table above shows the result of the survey for the AI chatbot customer expectation on addressing the problems/concerns. The data shows that the indicator "**no. 4 It is beneficial if AI Chatbots can respond promptly whenever there is a need to inquire about a product or clarify information."** has a weighted mean of 3.35 with a verbal interpretation High Expected. This is followed by, indicator **no. 1 "AI Chatbots is expected to provide precise answers to questions." and indicator no. 2. "I appreciate AI Chatbots responding specifically to concerns, such as providing the exact location of a product order"** with a weighted mean of 3.16 and a verbal interpretation of expected. The indicator no. 5 "Having AI Chatbots make recommendations when facing difficulty choosing between two products would enhance the shopping experience" has a weighted mean of 3.08 and a verbal interpretation of Expected. The last, is the indicator no. 3 **"I expect AI Chatbots to handle decisions or address concerns regarding returns and exchanges of products."** with a weighted mean of 2.98 and a verbal interpretation of Expected. With an average weighted mean of 3.13 or a verbal interpretation of Expected.

The survey results indicate that customers have high expectations for AI chatbots in addressing their product-related inquiries and concerns. It highlights the importance of responsiveness in customer service interactions (McCarthy & Canniford, 2018). In order to lessen human negativity, digitalization through the investigation of new technologies such as AI chatbots becomes a critical concern (Chi, 2024). Customers value the ability to get answers quickly and efficiently through AI chatbots. Since AI are commonly used as a tool to different situations and problems (Awad and Moosa, 2024). Further, it emphasizes the need for accurate and detailed information from AI chatbots. A major problem for clients is technology anxiety (Pillai and Sivathanu, 2020). Customers expect chatbots to be knowledgeable and provide solutions tailored to their specific needs. While the importance of handling returns and exchanges is recognized, it appears to be a slightly lower priority compared to prompt responses and accurate information. Thus, suggests that customers find recommendations from chatbots helpful, but not necessarily essential, when choosing between products.

These findings suggest that businesses implementing AI chatbots must prioritize ensuring fast and accurate responses to achieve customer satisfaction ([McCarthy & Canniford, 2018]). Chatbots should be programmed with comprehensive product knowledge and the ability to understand natural language. Also, according to Baabdullah et.al. 2022, interactive, transparent, and readability are a feature that positively influence the experience of the users. Secondly, chatbots should be designed to address specific customer concerns, such as order tracking. Finally, while recommendation features can be beneficial, the focus should remain on providing core functionalities effectively. In the early phases of adoption, users see AI chatbots as a useful addition; yet, it is important to address concerns about accuracy, dependability, and medicolegal ramifications (Temsah et.al., 2023).

Providing personalized Service; and

Table 4.
Expectation of User in AI Chatbots in Providing Personalized Service

Providing Personalized Service			
No.	**Indicator**	**Average Weighted Mean**	**Verbal Interpretation**
1	AI Chatbots can provide personalized answers to my needs.	2.82	Expected
2	It would be satisfying if AI Chatbots could remember my past purchases and recommend new arrivals of those products	3.24	Expected

3	I expect AI Chatbots to make specific recommendations based on the features and preferences I provide.	3.16	Expected
4	I expect AI Chatbots to understand me in any language I use, including Tagalog.	3.39	Highly Expected
5	I believe AI Chatbots can automatically offer discounts when the online shop has promotions without requiring me to ask for it.	3.24	Expected
Total Average Weighted Mean		3.17	Expected

The data in the table above presents the result of the survey for the AI Chatbots Providing Personalized Service for Customer in Online shopping. The average weighted mean in 3.17 with a verbal interpretation of Expected. The data shows that indicator **no. 4 "I expect AI Chatbots to understand me in any language I use, including Tagalog."** has the highest weighted mean of 3.39 with a verbal interpretation of Highly Expected. The next is the indicator **no. 5 "I believe AI Chatbots can automatically offer discounts when the online shop has promotions without requiring me to ask for it."** and indicator **no. 2. "It would be satisfying if AI Chatbots could remember my past purchases and recommend new arrivals of those products"** both with a weighted mean of 3.24 and a verbal interpretation of Expected. Indicator no. Indicator no. 3 **"I expect AI Chatbots to make specific recommendations based on the features and preferences I provide."** has a weighted mean of 3.16 with verbal interpretation of Expected. The last indicator is **no. 1 "AI Chatbots can provide personalized answers to my needs"** has a weighted mean of 2.82 with verbal interpretation of Expected.

The survey results reveal that customers have a strong desire for AI chatbots to provide personalized service during online shopping experiences. personalization, interactivity, perceived intelligence and perceived anthropomorphism were the common reason for using AI chatbots (Pillai et.al., 2023). The overall average weighted mean of 3.17 with a "Expected" interpretation suggests a general need for personalization, but some aspects are seen as more crucial than others. The highest weighted mean (3.39, "Highly Expected") belongs to indicator no. 4, this highlights the importance of multilingual capabilities for AI chatbots, particularly in regions with diverse languages like the Philippines where Tagalog is spoken (Cruz, 2020). Customers want to interact with chatbots in their preferred language for a more comfortable and efficient experience.

Indicators no. 5 and no. 2 suggest that customers appreciate proactive AI chatbots. They value features that personalize the shopping experience by automatically suggesting discounts or recommending products based on past purchases. These features can enhance customer satisfaction and potentially increase sales.

Interestingly, indicator no. 3 this suggest that customers prefer a balance between personalization and control. While they appreciate recommendations, they might also want some control over the level of personalization offered by the chatbot. Finally, indicator no. 1 has the lowest weighted mean. These mean customers view this as a basic functionality already expected from any chatbot. The customers might have lower expectations for personalization if the chatbot's capabilities for understanding their needs are unclear (Liu et al., 2020). Ensuring clear and specific communication regarding the chatbot's functionalities can manage customer expectations.

These results suggest businesses implementing AI chatbots in online shopping platforms to, first and foremost, multilingual capabilities are crucial to cater to diverse customer bases. The emergence of large language models, such as ChatGPT, has enabled the creation of highly sophisticated chatbots that can mimic human conversations with impressive accuracy (Sebastian , 2023). Second, chatbots should be designed to leverage customer data to offer personalized recommendations and promotions. However, it's important to strike a balance between personalization and user control to avoid overwhelming customers. A study of Baglivo et.al., 2023 mentioned that there is an increase in performance with it is aided with AI chatbots tools. Lastly, ensuring clear and specific communication regarding the chatbot's functionalities can manage customer expectations.

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Product Search

Table 5.
Expectation of User in AI Chatbots in Product Search

Product Search			
No.	**Indicator**	**Average Weighted Mean**	**Verbal Interpretation**
1	I believe AI Chatbots can find products even with limited information provided.	3.16	Expected
2	I appreciate AI Chatbots offering alternative products if my desired item is unavailable.	3.08	Expected
3	I expect AI Chatbots to suggest specific products that are superior to what I am seeking.	3.18	Expected
4	I trust that AI Chatbots searches through their database to accurately determine product availability.	3.22	Expected
5	It is expected for AI Chatbots to respond 24/7 without delay	3.27	Highly Expected
Total Average Weighted Mean		3.18	Expected

The data in the table above shows the result of the survey for Product Search of AI chatbots in online shopping. The data shows that the average weighted mean is 3.18 with verbal interpretation of Expected. The data presented that the indicator **no. 5 "It is expected for AI Chatbots to respond 24/7 without delay"** with a weighted mean of 3.27 and a verbal interpretation of Highly Expected. This is followed by indicator **no. 4 "I trust that AI Chatbots searches through their database to accurately determine product availability"** with a weighed mean of 3.22 and a verbal interpretation of Expected. The indicator **no. 3 "I expect AI Chatbots to suggest specific products that are superior to what I am seeking"** with a weighted mean of 3.18 and a verbal interpretation of Expected. Indicator **no. 1 "I believe AI Chatbots can find products even with limited information provided"** has a weighted mean of 3.16 and a verbal interpretation of Expected. The lowest indicator is **no. 2 "I appreciate AI Chatbots offering alternative products if my desired item is unavailable.",** it has a weighted mean of 3.08 and a verbal interpretation of Expected.

The survey results indicate that customers have moderate to high expectations for AI chatbots in assisting with product searches during online shopping. The overall average weighted mean of 3.18 with a "Expected" interpretation suggests a general need for efficient and accurate product search functionalities. The result emphasized the importance of constant availability for AI chatbots. Customers want immediate assistance regardless of the time or day (Huang & Liao, 2018). Further the result underlines the need for reliable information. Customers trust AI chatbots to provide accurate data on product availability within the online store's database. The initial level of public trust in chatbots varies depending on the topic of inquiry (Aoki, 2020).

The data can imply that a moderate level of expectation for AI chatbots to go beyond basic search functionalities. Customers might appreciate recommendations for better alternatives, but it's not necessarily the top priority. Finding products despite limited search terms appears to be an equally valued feature. Interestingly, indicator no. 2, this could imply that while customers appreciate alternative suggestions, it might be a less crucial feature compared to others.

Overall, the result suggests businesses implementing AI chatbots for online shopping platforms to ensuring 24/7 chatbot availability is crucial. More chatbots should be designed to access and accurately report product inventory data. Perceived intelligence, perceived security, and performance expectancy all strongly influence perceptions of smart buying, while all human-like and technological attributes—aside from effort expectancy—have a substantial impact on parasocial interactions (Aw et.al., 2022). While offering suggestions for superior products or handling limited search terms can be valuable features, they might not be top priorities for customers. Chatbots that use artificial intelligence (AI) to enhance human capabilities at a low cost are poised to become the seminal technology of the decade that follows (Kelly et.al., 2022). However, focusing on core functionalities like accurate product availability and basic search capabilities can deliver high customer satisfaction. Finally, businesses should consider how much emphasis to place on suggesting alternative products, depending on their target audience and product range.

Perceived Effectiveness of AI Chatbots based on the ISO/IEC 25010 criteria in terms of;

The data presented below shows the perceived effectiveness of AI Chatbots based on ISO/IEC 25010.

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Functional Suitability

Table 6.
Functional Suitability of AI chatbots in Online Shop

Functional Suitability			
No.	**Indicator**	**Average Weighted Mean**	**Verbal Interpretation**
Functional Correctness			
1	The AI Chatbot provides a comprehensive range of features and capabilities.	3.14	Functional
2	All necessary functions are available and accessible within the AI Chatbot interface	3.04	Functional
3	The AI Chatbot offers a wide variety of services and options to meet user needs effectively.	3.14	Functional
Total Average Weighted mean		**3.11**	Functional
Functional Completeness			
4	The responses provided by the AI Chatbot are accurate and free from errors	2.96	Functional
5	The AI Chatbot consistently provides correct information and solutions to user queries	3.06	Functional
6	Users can rely on the AI Chatbot to deliver accurate and precise responses to their inquiries.	3.06	Functional
Total Average Weighted Mean		**3.03**	Functional
Functional Appropriateness			
7	The AI Chatbot's functionalities are well-suited to the needs and preferences of users.	3.10	Functional
8	The features offered by the AI Chatbot align with the specific requirements of the target audience, such as product recommendation.	3.18	Functional
9	Users find the functionalities of the AI Chatbot to be relevant and appropriate for their tasks and objectives.	3.22	Functional
Total Average Weighted Mean		**3.17**	Functional
Grand Total Average Weighted Mean		**3.10**	Functional

It is shown in the table above the result of the survey conducted to determine the ISO/IEC 2501000 under Functional Suitability of the AI Chatbots. The data presented that the Grand Total Average Weighted mean is 3.10 with verbal interpretation of Functional. It appears in the data of **Functional Corrections** shows that it is functional based on the responses. It has a total weighted mean of 3.11 and a verbal interpretation of Functional, detailing the data above it shows that indicator **no. 1 "The AI Chatbot provides a comprehensive range of features and capabilities."** has a weighted mean of 3. 14 and a verbal interpretation of Functional, **no. 2 "All necessary functions are available and accessible within the AI Chatbot interface"** has a weighted mean of 3.04 with a verbal interpretation of Functional, and no. 3 "**Users can rely on the AI Chatbot to deliver accurate and precise responses to their inquiries."** has a weighted mean of 3.14 and a verbal interpretation of Functional. **Functional Completeness** shows that it is agreed by the respondents to be Functional with a weighted mean of 3.03 and a verbal interpretation Functional. Elaborating the content of this area shows that indicator **no. 4 "The responses provided by the AI Chatbot are accurate and free from errors"**, **no. 5 "The AI Chatbot consistently provides correct information and solutions to user queries"**, has a weighted mean of 3.06 with verbal interpretation of Functional, **no. 6 "Users can rely on the AI Chatbot to deliver accurate and precise responses to their inquiries"** has a weighted mean of 3.06 and a verbal interpretation of Functional. The **Functional Appropriateness** has a weighted mean of 3.17 and a verbal interpretation of Functional. Presenting the indicator shows that, indicator **no. 7 "The AI Chatbot's functionalities are well-suited to the needs and preferences of users."** has a weighted mean of 3.10 and a verbal interpretation of Functional, **no. 8 "The features offered by the AI Chatbot align with the specific requirements of the target audience, such as product recommendation."** has a weighted mean of 3.18 and a verbal interpretation Functional, lastly, **no. 9 "Users find the functionalities of the AI Chatbot to be relevant and**

appropriate for their tasks and objectives" has a verbal interpretation of Functional

A closer look reveals strengths in specific areas which is the rise of AI-based chatbots has gradually changed the way consumers shop (Sidlauskiene et.al., 2023). Functional Corrections suggests the chatbot performs its core functions effectively. This is further supported by indicators like providing a comprehensive range of features and delivering accurate responses. Similarly, Functional Completeness emphasizes the chatbot's ability to provide accurate and consistent information. The brand trust positively affects consumers' trust in chatbots, and perceived risk negatively affect consumers' trust in chatbots (Li et.al., 2023). Finally, Functional Appropriateness highlights the alignment between the chatbot's functionalities and user needs. AI chatbots and other cutting-edge information and communication technologies (ICT) tools are made possible by conversational AI (Mageira et.al., 2022).

These findings align with the growing importance of user-centric design in AI chatbots. Research by Liu et al., 2020, emphasizes that users prioritize chatbots that can address their needs effectively and provide accurate information. A Concerns about privacy and confidentiality in cybersecurity have become important indicators of sustainable use AI chatbots (Arpaci, 2023). The data here suggests this chatbot achieves these goals, potentially leading to a positive user experience. The positive evaluation indicates the chatbot meets functional requirements. However, further exploration is recommended. Usability testing beyond functionality, as suggested by Xu et al., 2023, can provide insights into user-friendliness and overall user experience. Additionally, considering long-term performance and user satisfaction through longitudinal studies would provide a more comprehensive picture of the chatbot's effectiveness. Finally, only chatbot customization affects the affective experiential state; perceived control, interactive speed, and chatbot customization all have a major impact on the cognitive experiential state (Huong et.al., 2023).

Performance Efficiency

Table 7.
Performance Efficiency of AI Chatbots in Online Shop

Performance Efficiency			
No.	**Indicator**	**Average Weighted Mean**	**Verbal Interpretation**
Time Behavior			
1	The AI Chatbot responds promptly to user inquiries, minimizing waiting time or zero waiting time	3.27	Very Efficient
2	Users find that the AI Chatbot is available 24/7, providing assistance whenever needed	3.20	Efficient
3	The AI Chatbot maintains consistent response times across various interactions.	3.14	Efficient
Total Average Weighted mean			
Resource Utilization			
4	The AI Chatbot efficiently utilizes computational resources, ensuring optimal performance	3.20	Efficient
5	Users perceive that the AI Chatbot operates smoothly without significant system slowdowns or delays	3.06	Efficient
6	The AI Chatbot effectively manages its resources to handle multiple user interactions simultaneously.	3.14	Efficient
Total Average Weighted Mean			
Capacity			
7	The AI Chatbot demonstrates the ability to handle a large volume of user inquiries without performance degradation.	3.20	Efficient
8	Users find that the AI Chatbot can accommodate increased demand during peak usage periods without service interruptions.	3.27	Very Efficient

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9	The AI Chatbot has sufficient capacity to scale its operations to meet growing user needs efficiently.	3.18	Efficient
Total Average Weighted Mean		3.22	Efficient
Grand Total Average Weighted Mean		3.19	Efficient

The table above shows the data for the result of the survey conducted to determine the performance efficiency of AI Chatbots in Online Shopping. The data revealed that the Grand total average weighted mean is 3.19 with a verbal interpretation of Efficient. Detailing the table above shows the three sub-determinants which are the first: Time Behavior with a weighted mean of 3.20 with verbal interpretation of efficient. Second: Resource Utilization with a weighted mean of 3.14 and a verbal interpretation of Efficient, lastly, the Capacity, with a weighted mean of 3.22 and a verbal interpretation of Efficient.

Exploring the indicator per sub-determinants shows that the 3 indicators of **Time Behavior**: no. 1 **The AI Chatbot responds promptly to user inquiries, minimizing waiting time or zero waiting time** has a weighted mean of 3.27 and a verbal interpretation of Very Efficient. No. 2 **Users find that the AI Chatbot is available 24/7, providing assistance whenever needed** has a weighted mean of 3.20 and a verbal interpretation of Efficient. No. 3 **The AI Chatbot maintains consistent response times across various interactions** has a weighted mean of 3.14 and a verbal interpretation of Efficient. For the **Resource Utilization** it has 3 indicator: No. 4, **The AI Chatbot efficiently utilizes computational resources, ensuring optimal performance** has a weighted mean of 3.20 and a verbal interpretation of Efficient. No: 5 **Users perceive that the AI Chatbot operates smoothly without significant system slowdowns or delays** has a weighted mean of 3.06 and a verbal interpretation of Efficient. No. 6 **The AI Chatbot effectively manages its resources to handle multiple user interactions simultaneously** has a weighted mean of 3.14 and verbal interpretation of Efficient. For **Capacity**: No. 7 **The AI Chatbot demonstrates the ability to handle a large volume of user inquiries without performance degradation** has a weighted mean of 3.20 and a verbal interpretation of Efficient. No. 8 **Users find that the AI Chatbot can accommodate increased demand during peak usage periods without service interruptions** has a weighted mean of 3.27 and a verbal interpretation of Efficient. No. 9 **The AI Chatbot has sufficient capacity to scale its operations to meet growing user needs efficiently** has a weighted mean of 3.18 and a verbal interpretation of Efficient.

The data above can be interpreted that the AI Chatbots in online shopping is a valuable tool for user and shopper to help them have a better experience. From the data it shows that the user of AI Chatbots in online shopping has a 24/7 efficiency experience and it can provide a consistent time responses that is acceptable and expected by a user from an AI tools. The data also shows that even if there are a load of multiple users it does not affect the performance and the efficiency of the AI chatbots.

It can be concluded that the AI chatbots is a revolutionary tool for every online shopping business in the Philippines. It can boost the trust and dependability of the shoppers to the online shop if they are using AI Chatbots since it can provide solution, answer query, and provide suggestion anytime 24/7 promptly whenever the shopper as the AI. According to Aslam (2023), AI has a deep impact in various industry which is evident in AI Chatbots. the intelligent educational recommendation platform's architecture, which includes AI chatbots, is often highly adapted (Kingchang, 2023). It can also improve the customer satisfaction and engagement of the online shopping because the AI Chatbots does not flicker even there are a load or volume of shoppers using the AI chatbots of the online shop. Finally, according to study of Fan et.al., 2022, Online consumers reported that the fundamental limitations of imbalanced chatbots' sales–service flexibility had a growing impact on customer experience as the advantages of personalization diminished and the risk to privacy increased.

IV. DISCUSSION

The results of this study demonstrate that AI chatbots in online shops in Nueva Ecija have been well-received, meeting customer expectations for functionality, efficiency, and usability. These findings align with previous studies, such as those by Li et al. (2023) and Kappi & Marlina (2023), which emphasized the importance of chatbot expertise, responsiveness, and anthropomorphism in building consumer trust and satisfaction. However, this study's results highlight the distinct significance of AI chatbots' 24/7 availability and their ability to manage multiple user interactions simultaneously, which was not as prominently discussed in earlier research. This points to a unique contextual adaptation of AI chatbots in the Philippines, where continuous service and high capacity are particularly valued by consumers.

Previous study, such as related to applying the Use and Gratification theory to AI chatbot acceptance in China also noted the importance of convenience and hedonic factors like perceived enjoyment. However, the present study emphasizes that, in the situation of Nueva Ecija, utilitarian aspects such as the accuracy of responses and system reliability are more critical to consumer satisfaction than hedonic factors. This divergence from findings in other geographical contexts suggests that cultural and regional differences play a significant role in shaping consumer expectations and preferences for AI chatbots in e-commerce.

It is evident that while AI chatbots have universally recognized strengths, their successful integration into online shopping platforms requires a deep understanding of local consumer needs. In Nueva Ecija, the emphasis on continuous availability, accurate information, and system reliability is dominant. This study contributes to the broader body of knowledge by showing that AI chatbots must be tailored not only to meet global standards, such as those outlined by ISO/IEC 25010, but also to address specific local expectations, thereby enhancing their effectiveness and consumer satisfaction in diverse e-commerce environments.

V.CONCLUSION

From the data above a conclusion were made. The survey data on online shopping and the use of AI chatbots in Nueva Ecija, Philippines, offers a detailed understanding of consumer behavior and expectations. The findings confirm that online shopping is particularly popular among young adults, with fashion, beauty, and electronics being the most frequently purchased categories. This trend highlights the need for businesses to focus on these segments and suggests that online shopping is primarily a supplement to traditional retail, rather than a complete replacement. Additionally, the study highlights the critical role of AI chatbots in shaping customer service, with consumers expecting prompt, accurate, and personalized interactions.

The rise of AI chatbots is significantly transforming the customer service landscape in the Philippines. The data suggests that consumers place a high value on chatbots' capabilities to provide 24/7 service, handle multiple interactions seamlessly, and offer multilingual support. These features are essential in a diverse market like the Philippines, where language and continuous availability are key to customer satisfaction. Moreover, the emphasis on proactive assistance and efficient product search functionalities indicates that businesses must invest in AI-driven solutions that can adapt to consumer needs and preferences, thereby enhancing the overall online shopping experience.

Implications of these findings suggest that businesses in the Philippines need to innovate continuously to stay competitive in the rapidly evolving e-commerce sector. Implementing AI chatbots that are not only functional but also culturally and contextually tailored to local consumer expectations can lead to increased customer satisfaction and loyalty. It is recommended that businesses prioritize the development of user-friendly, efficient, and personalized chatbot services to meet the growing demand for digital solutions. Furthermore, by leveraging the insights gained from this study, businesses can better align their strategies with consumer trends, ensuring they remain at the forefront of the e-commerce market in the Philippines.

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