Factor Affecting Consumer's Willingness of Purchasing Medication Online

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Abstract—**Vietnam's pharmaceutical industry is one of the fastest-growing sectors in the region. E-pharmacy in Vietnam is predicted to undergo remarkable growth in the near future due to the demand for online shopping, which has been accelerated by the impact of the COVID-19 pandemic [1]. However, in Vietnam, merely 3% of purchases were made via online platforms [2], [3] affirmed purchase intentions continue to be a vital concept in marketing.**

Based on the background, the research aims to assist the Swinburne undergraduate student team in investigating the correlation between factors that affect people from purchasing pharmacies online and using e-pharmacy. The research method is a survey, which aids in the collection of critical data that may be utilized to address the research objectives and reveal diverse opinions among consumers and university members. The data is collected from 83 respondents, aged 18 and up, living in cities, rural, and suburban. Not only univariate and bivariate approaches but also analysis and multiple regression analysis can be used to will be used to assess the correlations and contrasts throughout the original dataset. Swinburne Pharmacy also utilized age and sex quantifiable extrapolation to estimate whether or not consumers entered an e-pharmacy.

Regarding the result, the research has shown that the factor of convenience has positively affected the eagerness to buy medicine online, while other values do not predict the willingness to buy medication online. However, it is not a significant element of the consumers' willingness. The research also determines the correlation between consumers' willingness and location. From a managerial perspective, pharmaceutical marketing managers of drug companies can use the research findings to better design their strategies directed at the e-pharmacy market.

Index Terms—**Online medication, Customers' purchase willingness, Covid 19 pandemic.**

I. Introduction

There have been countless studies that concur on the significant benefits of market research on the development of successful marketing programs and overall success in the field. [4] have discussed the necessity of market research and its involvement in the goal-achieving process. Other studies have bridged the gap between market research, brand awareness, and positive customer attitude and behavior [5] [6]. Therefore, the study of [7] mentioned that technological advancement, especially the internet, had a significant effect on changes in consumer behavior and mindset; it enables a firm to discover its potential customers, their awareness of the products offered, and other key behavioral insights that dictate future purchase intention [8].

Businesses should be able to identify the markets where they will operate, manufacture goods that meet their target markets, and set the price at which they will make their offer [9]. The importance of this study stretches further as the dynamics between market problems become more complex with a myriad of its moving parts integrating and influencing each other more extensively than ever before [10]. Because of this development, succinct and well-developed research methods will go a long way in producing a deeper understanding of the customer.

Throughout our research, the pharmaceutical industry is considered to lack clear and compact analysis and studies on market research, customer surveys, and how to effectively create organizational values from the data collected. As this sector is more "niche" compared to other consumer products on the market, fewer quality studies on the topic are found. For industries that are less experienced in terms of market research, it is certainly harder to curate a successful and efficient market survey [11].

For the pharmaceutical industry, the population's wellness, the pharmaceutical business's product portfolio, and drug costs are a few of the variables that affect how the sector develops [12]. However, in this study, we paid particular attention to how data from marketing research can be implemented to improve pharma companies' overall market performances. The significance of understanding client demands is not only a great indicator for developing new marketing campaigns and increasing the firm's financial performance but also enhances consumers' well-being through clearer and more effective communication means via marketing and advertising.

In Vietnam, although the overall statistics illustrate a potential growth and expansion of the pharmaceutical industry in the future with e-pharmacy due to COVID-19, there is still a limited number of consumers purchasing pharmacies online consumers. Based on the review of the context and previous studies, the research is conducted by the Swinburne undergraduate student team in investigating the association between factors that affect customers from purchasing pharmacies online and utilizing e-pharmacy.

II. Theoritical Background

The study's purpose is to identify the determinants of online pharmacy adoption in post-pandemic in Vietnamese market. The chosen factors are unreliable quality, convenience, and the fear of Covid-19 pandemic. These determinants are generated based on certain research and prevalent existence in Vietnamese online market.

A. Unreliable quality

Trust is the cornerstone of a company's reputation which has a great positive influence on their perception of the product's quality [13]. The reliability of the product and consuming platforms refers to consumer trust in product information and promotion through various information channels [14]. Third-party judgements, such as information from forums, websites, and search engines, are frequently used to assess the credibility of online sales tools [14]. Product hazards exist in online purchasing, particularly for newcomers or amateurs, because customers are unable to inspect and evaluate product quality prior to making a purchase [15]. According to Ryland, merely 3% of pharmacy products are purchased online as the fear of counterfeit products. In Vietnam, studies into the relationship between unreliable quality of the product and e-commerce platforms have been conducted in two biggest cities: Ha Noi and Ho Chi Minh city. The study considers elements including reliability on the website, social media and forums, advertisement in newspapers and social media platforms, and consumer reference [16].
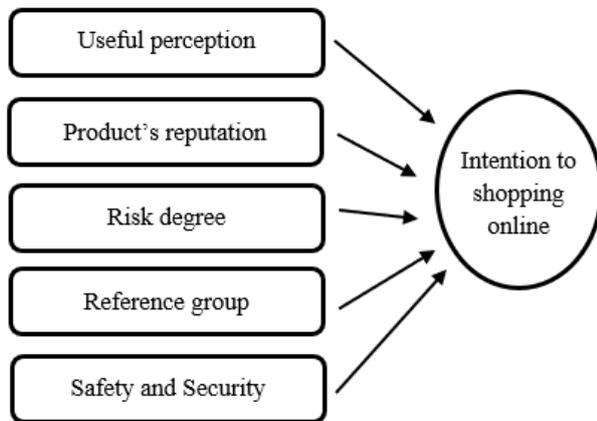

Fig.1 Research model of factors affecting online shopping intention of consumers in Ho Chi Minh City during the Covid-19 pandemic

In another research, channel trust which related to the long-term relationship with customers proposed a positive impact on customers' willingness. The research is presented based on the Bayesian network model (Fig.2). Thus, it can be concluded that unreliability negatively affects the willingness to purchase medication online.

Hypothesis 1: Unreliable quality of pharmacy products and purchasing platforms negatively affect the willingness to purchase pharmacy products online.

B. The convenience

Convenience concepts of time savings, accessibility, availability, simplicity, affordably decreased purchase anxi-
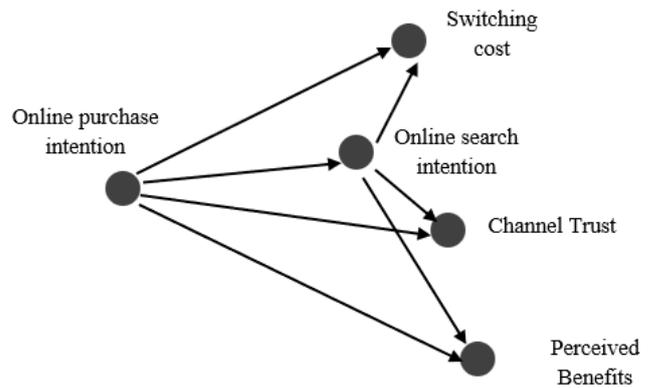

Fig. 2 Bayesian network model of consumers' willingness to make decision of purchasing medication online.

ety, and shopping engagement are all part of the handy notion [17]. Convenience is considered a key element for an online pharmacy to succeed as benefits both business operations and customers' value [18] (Convenience). One study cites the benefits of using an online pharmacy for its privacy and convenience, with the majority of surveyed respondents using this service for convenience and discounts [19]. In another survey by Tunsakul, a similar relationship is found in the Gen Z group [18] for general product categories. Likewise, in an Asian country study from Saudi Arabia, convenience has a positive impact on the willingness to purchase online [18]. Hence, convenience positively influences the willingness to purchase online medications. However, in the Vietnam context, further research into the relationship between Convenience and the willingness to buy pharmacy products online is needed.

Hypothesis 2: Convenience positively affects the willingness to purchase pharmacy products online.

C. Fear of the Covid-19 pandemic

The fear of the Covid-19 pandemic is believed to positively affect the intention of purchasing medications via the Internet in China [20]. In Viet Nam, there was a surge in pharmacy demand due to the Covid-19 pandemic [21].

The findings indicate that Covid-19 moderates consumer utility awareness, which promotes consumers to purchase online. While this was going on, contrary to the earlier study, the Covid-19 epidemic did not materially affect the internet commerce during that time. Despite this contradicting study, the conflict does not hinder the positive correlation between Covid-19 and online shopping behavior, due to the sheer amount of evidence supporting the latter [22]. Recently, research 2021 of the Vietnamese pharmacy market indicated that the fear of the Covid-19 pandemic favorably links with more frequent online buying for medical products [17].

Other indirect correlations to the relationship between COVID-19 fears and our research goals include Fear of COVID and vaccine uptake [23]; and Self-medication during the COVID-19 pandemic [24] [25] [26] did not study the direct effects of COVID-19 on the online shopping behaviors of medicine users, providing the research with numerous pieces of evidence suggesting that medication purchases increased significantly during the recent pandemic only.

Hypothesis 3: Fear of the Covid-19 pandemic positively affects the willingness to purchase pharmacy products online.

From the factors analysis above, the proposed model is generated in Fig.3 below.
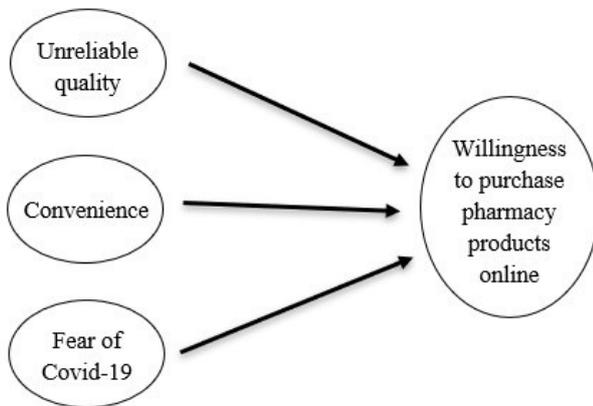

Fig. 3 Proposed research model

III. METHODOLOGY

A. Research context

Vietnam's pharmaceutical industry is one of the fastest-growing sectors in the region. In 2016, the industry was worth USD$ 3.3 billion which significantly rose by USD$ 1.3 billion after 4 years [2]. In 2026, this number is predicted to reach USD$16.1 million [27]. According to [28], the industry observes a 2% growth per year which means a compound annual growth rate (CAGR) of 6% between 2018-2020. Around 250 manufacturing plants, 200 import-export facilities, 4,300 wholesale agents, and over 62,000 retail agents have been added to the pharmaceutical production and commercial system [27]. The statistics illustrate the potential growth and expansion of Vietnam's pharmaceutical industry in the future.

E-pharmacy in Vietnam is predicted to undergo remarkable growth in the near future. In 2017, the value of the E-pharmacy market of the nation accounts for USD$72.06 million. The industry is forecasted to see a CAGR of 22.85% during the period 2023-2027 due to the demand for online shopping which has been accelerated by the impact of the COVID-19 pandemic [1]. However, in Vietnam, merely 3% of purchases are made via online platforms [2]. The major contribution of pharmacy products is from hospitals, accounting for 73% and the remaining belongs to retail stores. Currently, a number of major pharmacies are operating online purchase platforms, including Pharmacy, Medicare… However, this number is insignificant and not common in this specific market which may create opportunities for this industry to expand in the near future.

B. Data collection

The purpose of the research is to assist Swinburne Pharmacy in determining whether there is any correlation between limitations that negatively affect people from buying pharmacy online and people using e-pharmacy. Surveying, a kind of research methodology, aids in the collection of critical data that was created with Google Forms and distributed via social media. The survey method would be random, toward Vietnamese people aged above 18, living in two big cities (Hanoi and Ho Chi Minh city). Before the questionnaire, the purpose of the survey, the definition of online pharmacy, confidential policy, instruction, and other points will be written in detail in the opening of the survey. There were two parts to the survey: the online pharmacy questionnaire and the general information. In the first part, the Likert scale was used to evaluate the intention to use an online pharmacy. The second part consists of basic information about the respondents. 93 people agree to participate; however, only eligible 83 responses were used in the study. SPSS 26.0 was used to statistically evaluate the sample data. The descriptive statistic includes demographic factors such as age, gender, monthly disposable income, education level, and frequency usage of online pharmacies.

C. Measurement

This research paper concludes with full reference to both domestic and international studies. Each latent variable was made up of 3 to 4 measurement items with a five-point Likert scale for each questionnaire. Survey respondents were asked to articulate their feeling expressing through the scale. The nominal option is Highly disagreeing – Highly agree, Uncertainty – Certainty. Multiple statistical methods were utilized to analyze the data including correlation analysis, regression analysis, and reliability test. These techniques are frequently used to explain the causal relationship between independent and dependent variables in the fields of behavioral science and technology adoption. The primary statistical tools used in this study to assess the validity and relationships between variables are SPSS 26.0 and Microsoft Excel.

IV. RESULT

A. Reliability and Validity

The survey was conducted based on the number of consumers used to purchase medication online. Cronbach's Alpha coefficient indicated the variables utilized for evaluation are reliable and consistent. Table 2 shows that the lowest level is 0.783 (UQ) and the highest level is 0.804 (Fear of Covid-19). Cronbach's alpha values for all scales are greater than 0.65, indicating that the variables are reliable. Notably, the data for FC is more than 0.8 which is greatly reliable. Cronbach Alpha is accepted to run correlation analysis as the variables >0.6. In addition, a correlational test was performed. As correlation is the initial condition for regression, Pearson correlation is used to test the linear correlation between the dependent and independent variables. A correlational study shows that the Convenience variable has substantial correlational values (0.007), whilst the others do not.

B. Hypotheses development

The regression studies were carried out once the reliability test was established. Regression analysis supports researchers in finding the impact between independent and dependent variables from linear analysis. From the analysis's result, the proposed model can be concluded. Table 5 clearly shows the outcomes and only one proposed hypothesis is supported. From the results of table 5, it is clearly seen that

TABLE 1
MEASUREMENT INSTRUMENT

Latent Variables	Measurement Items	Sources
Intention to purchase online	- I have strong intentions to purchase online medication. - I will buy medicines from online pharmacies in the future. - I would like to recommend to the people around me to purchase medicine online.	[29]
Convenience	- Avoiding crowds. - Finding exactly what I want in the least amount of time. - Online medication channels are trustworthy. - Other consumers' evaluations of the product are reliable.	[30] , [31], [32]
Unreliable quality	- I would find it very difficult to evaluate the characteristics of the products accurately. - I would be concerned that the product would not provide the level of benefits advertised on the Web. - There would be many possibilities that the product would not perform as it is supposed to. - Illegal Internet pharmacies may sell prescription medications without a valid prescription	[33], [30]
Fear of Covid-19 pandemic	- Within the social distancing period, the danger of infection from the public is high - Within the social distancing period, going to shops increases the risk of infection significantly	[34]

convenience has positively affected the eagerness to buy medicine online while other values do not predict the willingness to buy medication online. Also, although willingness is supported by convenience, the value has a very weak coefficient. This means that convenience is not a significant element of the consumers' willingness.

V. DISCUSSION

Three variables were examined in the research, which includes: (1) Unreliable quality, (2) Convenience, and (3) Fear of COVID-19. This section will be dedicated to discussing the results found from the survey in comparison to the hypotheses made earlier.

The base hypothesis of variable (1): Unreliable Quality is that it negatively affects customers' willingness in online medicine purchases. However, the results showed that the data is irrelevant to the hypothesis. Unreliability in drug quality is shown to have no effect on consumers' willingness to purchase. This may not be because people are not aware or do not have any concerns about the origin and the quality of the medicines they purchased, but maybe other factors are interfering with their decision-making process.

40-60% of Vietnameses depend on self-medication. These people are twice as likely to purchase antibiotics [35]. Overall, the awareness of prescription drugs and antibiotic resistance of Vietnamese people is low [36], [37]. However, there is a contradiction between the two studies. While they both agree that Vietnam has low overall awareness of prescription drugs & negative effects of inappropriate usage, [37] pointed out that the awareness level improves significantly with a rise in factors like education level and income. Meanwhile, [36]pointed out that antibiotic usage without

prescription almost doubled in urban areas compared to rural areas (50% and 28% respectively). If the figures in these studies are valid, we can clearly see that though correlated, awareness of the negative effects of inappropriate drug use and actual inappropriate drug usage is not causal. This means, though people are aware of possible side effects, other factors like conveniences and low access to formal public healthcare still nudge Vietnamese people toward self-treatment and description-less-medicine use. Similarly, consumers may not be completely aware of the risks and potential dangers involved with ordering medications online and may not be able to tell the difference between legitimate and unauthorized medicines (4). The same study in Hungary reported that 82.8% of patients surveyed (out of 422 patients) are unaware of the quality of the medicines and supplements bought (4). Because the source and quality of illegal and counterfeit medications are unknown, and because patients frequently use these products without the knowledge or supervision of doctors or pharmacists, they constitute a severe threat to the public's health.

A. Convenience

The Convenience variable (2) positively affects the willingness to purchase pharmaceutical products online in spite of the very weak coefficient, which has been shown in the result of table 3. Another study has also shown that the higher the convenience level, the higher willingness to purchase a product online (Farida 2016). Adding to the result, a study from SmartInsights (2020) states that with so much variety both online and on the high street, customers are seeking something unique to differentiate companies. With 83 percent of customers reporting that convenience is more essential now than it was five years ago, convenience might

be the answer. However, further research is required to analyze the affection of convenience on the willingness to buy medicine online. The reason is that retail pharmacy is a potential sector to grow that indirectly aligns with online medication purchases. In 2016, there were 185 contemporary pharmacy chains represented among Vietnam's 55,300 drug outlets, according to market research firm IQVIA. The overall number of drugstores fell to 44,600 in 2021, while the 1,600 contemporary pharmacy chain outlets saw an uptick. This number is predicted to continuously grow in the future and align with e-pharmacy as a business operation development. Hence, consumers might value the convenience that comes from retail stores more than online ones as the distribution of retail stores is widely distributed. Therefore, the weak coefficient of convenience has been reasoned.

B. Fear of COVID-19

The eventual hypothesis (3): Fear of COVID-19 is concluded to be irrelevant to the willingness of purchasing medication online. The result is different from the hypothesis due to the period of executing the survey. The survey is being executed in May 2022. This is when the nation has loosened its restrictions on social distancing since April 2022 when the fear of Covid-19 might be decreased. Meanwhile, research from the hypothesis developed in 2021 can be less relevant to the current situation in 2022. Therefore, the irrelevant result is justified by the period of survey execution.

It is important to note that although the variable for "Fear of COVID" is irrelevant to the presented hypothesis, the e-pharmacy industry has been absolutely lending important services while the world has been in mourning over the mortality danger posed by the coronavirus pandemic in the last few years. They have emerged as one of the primary beneficiaries during Vietnam's lockdown time. People are increasingly using internet pharmacies to get prescriptions due to the lockdown, travel restrictions, and concern over virus transmission. This means that the Covid-19 pandemic has had a favorable effect on the expansion of online pharmacies both in Vietnam and throughout the world [38].

C. Contribution of this research

The current study adds to those previous studies that the willingness of purchasing medications online is impacted by several factors including convenience value. There are not many research articles that use e-pharmacy as a track to complete a comprehensive research report because the issue of this study is relatively new in the Vietnam environment. This is due to the study on internet shopping that we identified in the research paper market. Our empirical analysis can thus partly serve as a starting point for future studies into the process of ordering items from an online pharmacy.

These outcomes, particularly for pharmaceutical companies, can use this data to keep up with client needs and demands. The proper information is essential for marketers to implement the most effective strategies.

D. Limitations and suggestions for further research

Due to the limited number of responses received from the survey, which causes certain biases when assessing the variables, this research tends to be qualitative in nature. Consequently, the results for the coefficient and correlation test are different compared to another relevant research. Besides, there is a significant age gap in the data set for the responders. As the majority of the respondents were under 30, the research's findings might not be adequate to look at further client segments. In addition, the context of this research is the Vietnamese market, which results in differences in market status, and demographic and economic factors when compared with other countries. For future research, it is suggested to focus on both qualitative and quantitative research so that the results will be sufficient and validated to be analyzed. Moreover, more demographic, technological, and economic factors should be involved in the research for further understanding of the customer's behavior as well as the market prospect.

VI. Conclusion

The flourishing of e-Commerce and the pharmaceutical business in Vietnam are both contributing to the sector's rapid growth. As a result, future success for e-pharmacy is anticipated. To determine the factors that will determine the future performance of e-pharmacies, further study must be done.

The research supports the hypothesis: Convenience positively affects the willingness to purchase pharmacy products online. Despite a weak result in the coefficient test, convenience is a critical factor in determining the propensity to acquire e-pharmaceutical items. However, there are other factors that, while not being confirmed by our research, have been found in previous studies reflecting the variations in market status between countries.

In terms of contribution, this study satisfies the constraints and offers a wealth of secondary data outlining the variables affecting users of e-pharmacies. In order to obtain sufficient data to assess and improve the quality of the study, it is also important to identify the effects of convenience using larger participant groups, such as those based on age, geography, and income.

This research was conducted by a Swinburne undergraduate student team to identify the factors affecting the willingness of purchase intention; further research is needed to be conducted in order to support marketing and advertising. With the assistance of technological innovation, clients may purchase medications more easily and spend less time traveling. While based on the convenience factor, pharmacy stores should consider assisting online 24/24 hour and on-time delivery.

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APPENDIX

TABLE 2
CRONBACH ALPHA STATISTIC OF VARIABLES

Factors	N of items	Cronbach's Alpha
Unreliable quality (UQ)	5	.783
Convenience	3	.794
Fear of Covid-19 (FC)	4	.804

TABLE 3
DESCRIPTIVE STATISTIC AND CORRELATION FOR ALL VARIABLES

Variables	Mean	Sig. (2-tailed)
Unreliable quality (UQ)	2.4	.265
Convenience	2.1	.007
Fear of Covid-19 (FC)	2.5	.63

TABLE 4
CORRELATION BETWEEN WILLINGNESS TO PURCHASE ONLINE MEDICATION AND DEMOGRAPHIC OF CONSUMERS USED TO BUY MEDICATION ONLINE.

Variables		Age	Gender	Location	Education level	Salary	Online shopping frequency
Willingness to buy medication online	Sig. (2-tailed)	.252	.775	.000	.238	.970	.872

TABLE 5
RESULT OF DIRECT EFFECT.

	Coefficients	T-value	Sig. (2-tailed)	Outcomes
Unreliable quality => Willingness to buy medication online (H1)	.264	-.940	.356	Unsupported
Convenience => Willingness to buy medication online (H2)	.202	2.506	0.19	Supported
Fear of Covid-19 => Willingness to buy medication online (H3)	.204	1.453	.158	Unsupported

Dependent variable: Willingness to buy medication online.