International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 7, 2020
ISSN: 1475-7192

THE INFLUENCE OF UNAVAILABILITY OF MEDICAMENTS AND LACK OF EMBARRASSMENT ON ONLINE PURCHASING OF MEDICAMENTS

[1]Shakeerah Mohd Shukri, Indang, Mohd Shukri Ab Yajid

Abstract---*The current study aims to address this gap in existing research and attempts to offer a picture of specific determinants that significantly influence the customers' perceived risk and trust during online shopping of medicaments. A theoretical model was also proposed to explain the influence of all of these encouraging and discouraging factors on the customers' perceived risk and trust. In order to collect the data needed for the examination of this model, an online questionnaire was distributed, which resulted in 157 valid responses. The impacts of the variables of interest were further quantitatively evaluated by Principal Component Analysis (PCA), using SPSS as the statistical software. Therefore, the discouraging constructs were the most significant constructs affecting consumers' intention to purchase medicaments online. The fact that the customers' intention to purchase medicaments online is mostly controlled by discouraging factors may not necessarily be indicative of no potential for this purchase medium. The results of this research could assist online retailers in implementing appropriate strategies in decreasing the consumers' perceived risk, thus increasing their online transactions.*

Keywords---*Research, Shopping, Medicaments, Model, Examination, Variables, Software, Transactions.*

I. Introduction

Over the last two decades, the global economy witnessed a significant technological revolution with the emergence of electronic commerce (e-commerce), or the exchange of products/services and payments via the Internet. The Internet, in the global-village era, is not only considered as a networking media, but also used as a tool for communication and transaction between retailers and consumers in the global market. The rapid proliferation of Internet retailers in the last two decades has provided optimistic expectations for online business-to-consumer transactions (Nepomuceno, Laroche, & Richard, 2014; Nguyen et al., 2019; Nikhashemi et al., 2013; Pathiratne et al., 2018; Seneviratne et al., 2019; Tarofder et al., 2019). Statistics showed that the growth rate in the number of online shoppers is higher compared to that of the Internet users, proving that online shopping is becoming more popular. Proportionally, the volume of online purchases is increased by the growth in the number of online customers. The Internet has provided a faster, cheaper, and more convenient way of purchasing different products and services worldwide. According to the World Health Organization (WHO), 50 percent of the pharmaceuticals that are sold over the Internet are counterfeit. A similar report presented by the European Alliance for Access to Safe Medicines in 2008, also stated that three in five medicines sold over the Internet are either sub-standard or fake (Forsythe & Shi, 2003). Aside from inefficacy, these counterfeit products may cause several side effects such as despair, craving, and

[1]*Management and Science University*
shakeerah@msu.edu.my

addiction in patients. This fact proves that the perceived risk of healthcare and pharmaceutical products is significantly higher compared to other products sold over the Internet. Therefore, exploring the magnitude of relationship between the perceived risk and trust in the pharmaceutical market and their influential antecedents is of significant interest. The majority of previous studies that have been carried out for the evaluation of the perceived risk and trust during purchase of products via the Internet are for low-risk products or mature markets. Furthermore, most existing studies in the pharmaceutical market have investigated the parameters that are also common in other product categories. In this project, we will concentrate on the antecedents that specifically affect the perceived risk and trust during the online shopping of medicaments (Masoud, 2013). In marketing, the "perceived risk" concept was firstly introduced, who indicated that customers perceive certain risks during purchasing decision-makings. Since then, a large number of theoretical and empirical researches have been conducted to investigate the impact of perceived risk in various aspects of purchasing behaviors. In a common adopted framework, it is assumed that prior to every purchase. The consumers compare the perceived risks and benefits of all available shopping channels. The emergence of electronic shopping over the Internet in 1994 has in turn stimulated widespread studies in developing a framework that represents the influence of various factors on the costumers' decision-making process for online shopping. However, employing the traditional dimensions of perceived risks may not be appropriate in interpreting threats specific to online shopping. (Dennis, Merrilees, Kim, & Forsythe, 2009) In spite of numerous researchers investigating the general effects of perceived risks on online shopping, considerably less attention has been devoted to studying the perceived risks of online shopping of medicaments from the customers' perspective. Studies on consumer behavior towards online pharmacies are scarce. Despite the fact that e-patients (or the e-health costumers) have significant impact on the success or failure of any e-health service, they have generally been disregarded in prior researches. Some studies applied the general research findings on online consumer behavior to specific products, such as medicaments, but little research is specifically focused on retail selling and distribution of medicaments. This study examines the correlation between the specific antecedents of perceived risk and trust in the context of online retailing of medicaments. This topic has not been adequately investigated in previous literature, which makes this research of great interest from both academic and social perspectives (Chen, Yan, Fan, & Gordon, 2015). In this project, we will propose a new model to describe the specific antecedents that influence the customers' perceived risk and trust during the online shopping of medicaments. For the purpose of this study, we defined the term "medicaments" as "original branded or generic drugs, pharmaceuticals, food supplements (such as vitamins etc.), healthcare, and beauty products which are legally manufactured and regulated by the authorities". Currently, the consumers who purchase the medicaments via the Internet could not confirm whether the obtained products contain the correct ingredients; whereas in case of brick-and-mortar pharmacies, consumers are confident that pharmaceutical products are subject to regulation and licensing requirements.

Another significant challenge that customers encounter during the online purchase of medicaments is the anonymity of their source. These products are mostly sold in temporary websites that provide no accurate contact information to consumers. Although these online stores may offer products with appearances and names similar to those medicaments existing in clinics and pharmacies, their quality, efficiency, and safety remains unconfirmed. Therefore, compared to brick-and-mortar pharmacies that are reliable enough in regard to the quality of offered medicaments, online pharmacies are often unable to build sufficient confidence in consumers about the originality and safety of their products (Mortimer, Fazal e Hasan, Andrews, & Martin, 2016). Based on these facts, and despite online purchasing of medicaments being very beneficial for consumers in terms of service, availability (either in time or location of purchase), and prices, serious risks such as uncertainty about the quality and effectiveness of the offered products as well as the inability to consult with a specialist remains as the main challenge. During the decision-making for the selection of an appropriate purchase channel, consumers

often experience a trade-off between the negative and positive aspects of online shopping, which may prohibit them from purchasing medicaments online and select another channel to purchase their needed products (Eggert, 2006). Therefore, it is of great interest for any online retailer to understand the factors that increase the consumers' perceived risks during online shopping of medicaments and implement relative strategies to reduce their negative influence.

II. Literature Review

The latter decade of the 20th century witnessed the emergence of the Internet as a revolutionary breakthrough, which changed various aspects of human life. Economy and business were also greatly affected by this technology. The Internet shifted the world-marketing trend, from a pure traditional store type, to a combination of virtual and physical stores (e-stores). Consequently, various businesses and organizations have attempted to redesign their activities according to the new market paradigm. One of the most significant applications of the Internet in business and marketing is its ability to prepare a context for virtual transaction of products and services (Tsai & Yeh, 2010). This communication medium was firstly used in 1994 by the German company "Intershop" for online sale of products to target customers, and was then implemented by Amazon and e-Bay in 1995 and 1996, respectively. Online shopping is the process of purchasing products/services directly from a vendor in real-time and without an intermediary service over the Internet. When an intermediary service is present, this transaction is called electronic commerce (e-commerce). The concept of "risk" in the consumer behavior context was firstly introduced that all the consumer behaviors contain a degree of risk. Since then, multitudes of valuable theoretical and empirical research have been performed to explore the types and dimensions of perceived risk in the field of traditional consumers' purchasing behavior (Faqih, 2013). One of the first definitions of perceived risk in the context of traditional retailing was suggested. In this definition, the perceived risk is referred as "the overall amount of uncertainty perceived by a consumer in a particular purchase situation". The perceived risk is a property that would be lost (i.e. the amount at stake) if the results of the action were not positive, and the individuals' subjective sensation that the outcomes of the act would be adversative. Considered perceived risk as a kind of subjective expected loss, defined perceived risk as "customer's subjective assessment of the consequence of making a purchasing mistake". Identified poor performance, danger, health hazards, and costs as antecedents of the risk, categorized the various types of risk according to the losses resulting from them, and proposed four types of losses including money, time, hazard, and ego losses. The consumers' perceived risk was also classified into five types of risks; physical, psychological, social, financial, and performance (functional). A number of scholars have evaluated the various aspects of perceived risk in the context of online shopping including financial frauds, web deception, transaction security, privacy, product type, product performance, payment, and delivery. In the context of online retailing, the impersonal nature of virtual space often results in higher levels of risks compared to the traditional shopping environment (Huang, Schrank, & Dubinsky, 2004). Therefore, the higher degrees of perceived risk in the online shopping process result in a negative effect on the consumers' intention to regularly utilize this transaction channel. The tendency to shop online shows a stronger correlation with the perceived risk compared to the convenience that is provided by the Internet. As a consequence, the customers are more likely to refer to the traditional stores that possess sounder privacy and security structures. On the other hand, confidence perceived by customers in order to choose the web as a purchasing medium is positively correlated with their online shopping intention. The perceived confidence is generally outlined in two aspects, which are confidence and self-efficacy. The confidence aspect involves confidence in the suitability of the Internet as an online purchasing tool, the diversity of vendors, and the availability of information (Li & Huang, 2009). The self-efficacy aspect also refers to the belief in one's ability to successfully perform a behavior; or the level of task difficulty individuals believe is attainable with their perceived skill level. In the context of online shopping, self-efficacy determines the

consumers' confidence regarding their ability to participate in this online activity. However, perceived risk has a stronger correlation with the intention to purchase online compared to perceived confidence. Since e-Health is a relatively new concept, there is no comprehensive and well-established explanation of this term as of yet. For instance, in most cases, this term merely refers to health informatics or telemedicine.

Describes this concept as "the use of emerging information and communication technology, especially the internet, to improve or enable health and healthcare". In another definition, the e-health is a health-related industry made possible by the internet. More recently, proposed a definition for e-health as "an emerging field of medical informatics, referring to the organization and delivery of health services and information using the internet and related technologies" categorized e-health into four different areas (4Cs): care, content, connectivity, and commerce (Sinha & Singh, 2014). E-health care involves the expansion of services to the virtual environment and the provision of information-rich services (e.g. monitoring systems that record the patients' situations continuously at home, and transfer the patients' data to health professionals). The e-health content is the offerings of valuable healthcare information via electronic communication channels (e.g. online education of patients by providing appropriate documents and video presentations). E-health connectivity also refers to internet-based facilities that provide connection between different parties of a healthcare system (i.e. patients, professionals, suppliers, insurance agencies). One regular example of this field is the internet (or intranet) based transfer of patient data amongst the related members of the healthcare system, such as physicians and insurance companies. On the other hand, e-health commerce denotes the products/services that are sought after and paid for online (e.g. medicaments and insurance products) (Aghekyan-Simonian, Forsythe, Kwon, & Chattaraman, 2012). Further studies have also added a fifth C (communities) to Meyer's 4C. Virtual communities are groups of individuals who share norms of behavior or certain defining practices via the Internet. On the other hand, most governments restrict personal autonomy for using pharmaceuticals in order to stop them from harming themselves or others. Therefore, a healthcare service might be partly constrained by the authorities (Miyazaki & Fernandez, 2001).

Moreover, the trade of restricted medicaments without obeying the appropriate restrictions is prohibited in most countries. However, the proliferation of internet-based pharmacies has made it possible for today's patients to easily buy the required pharmaceuticals from the suppliers located in other countries. The operation of these sellers might be either legal or illegal in the country they are located (Hong, Zulkiffli, & Hamsani, 2016). The global nature of this transaction makes it difficult to assess and regulate this type of trade. Unavailability of medicaments is one of the main parameters that negatively affect consumers' risk perception in online shopping. They might assume, correctly or otherwise, that such products would not be prescribed by a physician, or they might have been refused in the past. Moreover, people could buy pharmaceuticals that are illegal, restricted in their country, without a prescription, or bereft of the authority of a pharmacist (Laroche, Bergeron, & Goutaland, 2003). According to psychological literature, three fundamental sources of embarrassment have been identified, including the social evaluation, the awkward interaction, and the loss of self-esteem. The first theoretical account states that embarrassment results when an individuals' desired social character and belonging is threatened, while the second account identifies embarrassment as an outcome of a public disruption of a social act (Almousa, 2011). The last theoretical account also states that individuals may be embarrassed due to disappointments with themselves, leading to a loss of self-esteem. Therefore, according to this theoretical account, the embarrassment might be privately expressed, as individuals could not completely act in accordance with their own desires and norms. In fact, the results of the previous studies indicated that the consumers might experience all of the aforementioned types of embarrassment in the pre-and post-purchase context (Pires, Stanton, & Eckford, 2004). There are many day-to-day products that consumers might be uncomfortable with purchasing. In fact, the effects of embarrassment on the consumers' purchase behavior is confirmed in many industries, such as the

weight-loss industry, plus-size clothing industry, and online dating, with an estimated value of $65 billion, $32 billion, and $473 million annual transactions, respectively. However, the effect of this psychological parameter is more crucial in the healthcare and hygiene industries. Most of the medicaments that are favored by online shoppers are associated with situations where a social stigma exists, meaning that the consumers might feel uncomfortable to enclose their condition to a physician or to purchase their needed medicaments from traditional brick-and-mortar pharmacies (Chakraborty, Lee, Bagchi-Sen, Upadhyaya, & Rao, 2016). For instance, pills like Sildenafil (with trademark of Viagra), Tadalafil (With trademark of Cialis), and Prozac (an antidepressant) are ubiquitous online due to the stigmatism associated with them. In addition, according to a statistical test, among 20 day-to-day consumer products, the contraceptive and personal hygiene goods were determined as the most embarrassing products. Uncertainty is perhaps the darkest aspect of offered in e-pharmacies are more difficult to ascertain, especially if these pharmacies are unregistered or unapproved by the appropriate authorities (Ko, Jung, Kim, & Shim, 2004). Purchasing medicaments from unregistered online outlets increases the risk of obtaining counterfeit products that might contain hazardous ingredients or an incorrect dosage of the therapeutic substance.

The offered products could also be new medicaments that have not yet passed the necessary evaluation protocols for approval. Due to an insufficient medical proficiency, as well as the information asymmetry between consumer and retailer, the customers are incapable of ascertaining the quality of needed products prior to purchase, and not even after purchasing them (Kumar & Dange, 2014). The safety and affectivity assessment of these products may be even difficult for healthcare professionals. Furthermore, the information about medicaments available on some websites can be inadequate or unreliable. For instance, recently, numerous types of herbal products have been introduced over the Internet, but the information on these products are severely limited, or if available, it has been provided by lay individuals or product manufacturers themselves (Lin, Jones, & Westwood, 2009). Therefore, the available information is more of a marketing tool and unsubstantiated with clinical or laboratory studies. As a result, this information is usually unreliable and is unsupported by any clinical or laboratory evidence. Individuals are regarded as the best judges of their interests; however, in fact, people attempt to consult with reliable sources prior to making decisions. Similarly, the patients are more likely to make correct decisions after consulting with healthcare professionals.

Prescription errors by physicians certainly occur after consultation with patients. Studies reveal a rate of prescription errors in the range of 7 to 12%; however, the majority of these mistakes are detected by pharmacologists, nurses, or other medical professionals. However, referring to pharmacologists without consultation with a doctor increases the risk of incorrect diagnosis, or the selection of inappropriate pharmaceutical (either in type or in dosage). In the case of online shopping, there is no possibility of consulting with a healthcare professional and thus, there might be an increased hazard of treating symptoms instead of their underlying origin(s) (Crespo, del Bosque, & de los Salmones Sánchez, 2009). Furthermore, the international accessibility to the medicaments offered via the internet may result in confusion about the drugs' names and labels. For instance, one of the most widely used medication as a pain reliever and fever reducer, called Acetaminophen in some countries, or Paracetamol in others.

There is also a probability of side effects or adverse reactions with other drugs that are used simultaneously by the patient. Healthcare professionals are concerned that the increased privacy of online purchasing might eventually lead to taking medications without being aware of their reactions vis-à-vis other drugs (Wu & Ke, 2015). Behavioral uncertainty of e-stores involves the inherent difficulties encountered by customers for the precise evaluation of the contractual performance of these web-based stores. Because of the opportunistic tendency of the transaction parties, behavioral uncertainty increases within the most exchange contexts. However, in the case of online shopping, this issue could be more challenging. Customers are mostly concerned about unreal claims by the e-vendor and their poor after-sales services. This fact could increase the

transaction costs, as customers require more time to search for trustworthy e-vendors and control their online transactions. In the case of online purchasing of medicaments, the influence of trust is more critical (van der Heijden, Verhagen, & Creemers, 2001). Substantial concern regarding the medicaments and other health products offered in e-sources arises from the fact that these products are usually supplied by doubtful persons or companies. These sellers mostly provide no contact information, or have temporary website addresses. In this situation, there are no opportunities for customers to track these online sellers or contact them in case of any problems. It is also risky to buy medicaments from anonymous dealers, since their location, their product sources and raw materials, and the manufacturing conditions are usually unclear (Benazić, Tanković, & Music, 2015). For instance, numerous websites are recently proliferated, offering a wide variety of new herbal products. However, the major concern for the consumer is the determination of the authenticity of these websites. Some of these online stores may be involved in illegal activities, such as the production of unsafe or ineffective products masquerading as herbal medicines.

Following are the hypothesis of this study;

H1: unavailability of medicaments has affecting role on the online shopping of medicaments.

H2: lack of embarrassment has affecting role on the online shopping of medicaments.

III. Methodology

The dependent variable of this research was considered as "the online purchase of medicaments". On the other hand, the "website awareness", "unavailability of medicaments", "avoidance of embarrassment", "the uncertainty about the quality and safety of the products", and "inability to consult and follow-up with a specialist" were chosen as dependent variables. The mediators of this model were also determined as "perceived risk," "trust", and "intention to buy medicaments online".

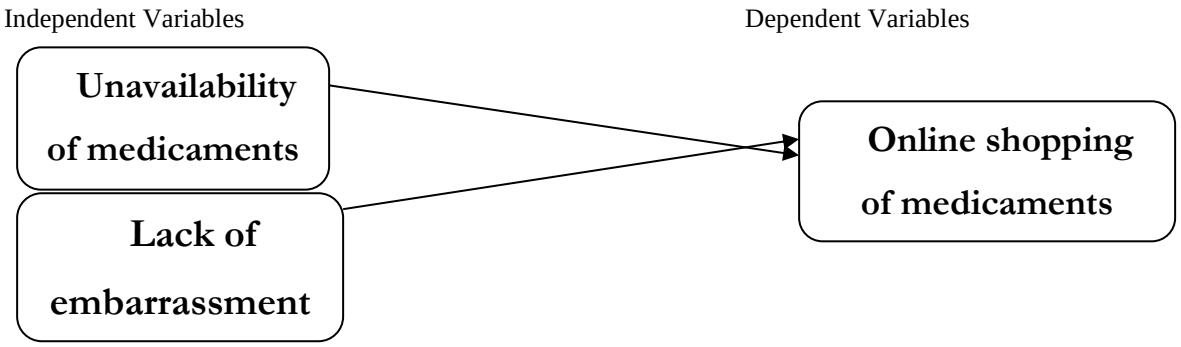

Figure 1: The theoretical model proposed for online shopping of medicaments and its comparison with the base model.

As mentioned previously, the proposed model is composed of nine constructs. However, the relationships between four constructs (trust, perceived risk, intention to buy online, and online shopping) have already been established in previous studies. Therefore, the main objective of this questionnaire was to examine the impact of five specific constructs, which have been added in the extended model. PCA analysis is regarded as a data reduction technique that could remove redundant or highly correlated variables from multivariate data analyses. The PCA analysis was further followed by the reliability analysis to ensure the validity of the obtained factors. Different scales including binary, multiple, 5-point Likert scales, as well as checkbox method were utilized in the questionnaire so that it could address the research objectives and provide appropriate

answers for the research questions. The data collection process lasted for three weeks, and 171 responses were collected in this interval.

IV. Results

The following sections provide the results obtained from analyzing the data received from the participants of our study.

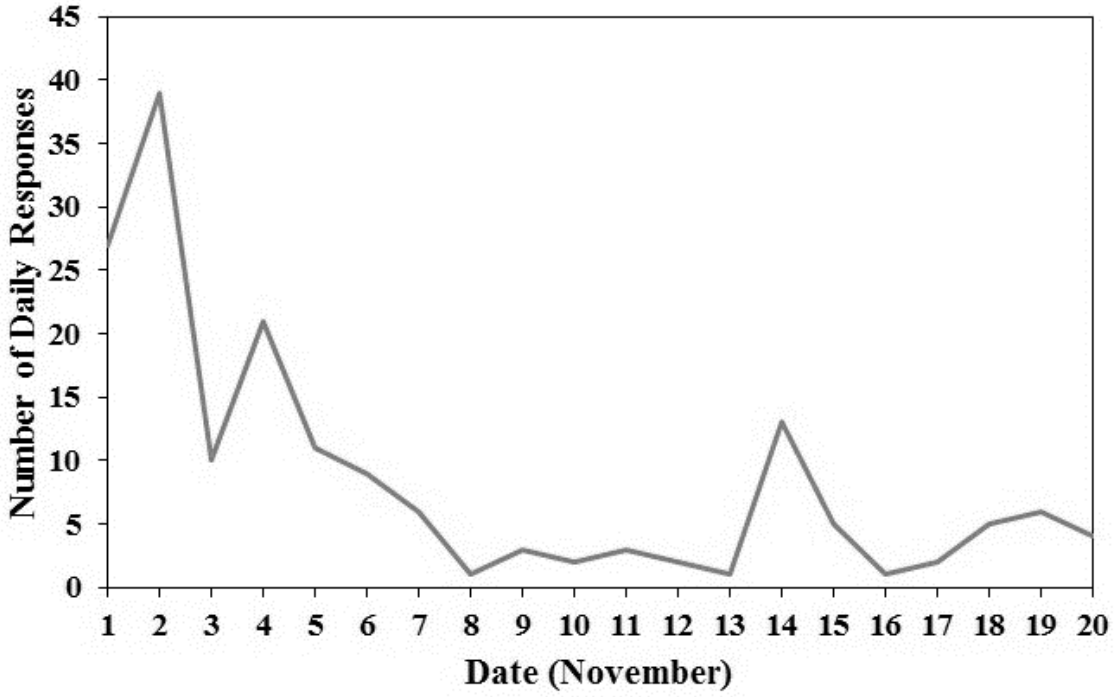

Figure 2: The number of daily responses received during the data collection period.

The respondents of our questionnaire were made up of 91 females and 66 males, illustrating the dominance of female respondents, who accounting for 58% of total participants. The descriptive statistics of the respondents' age also showed that the majority of participants (39%) were between 18-24 years of age, followed by 25-29 (20%), 30-34 (17%), and 35-44 (13%).

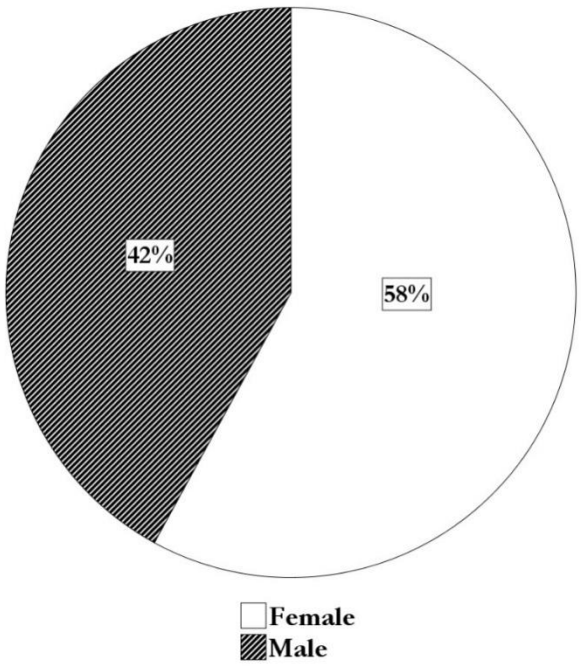

Figure 3: The respondents' gender distribution.

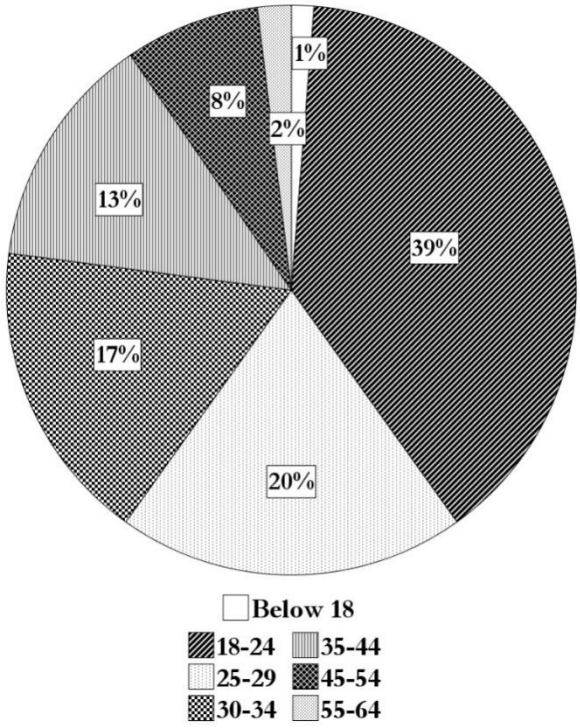

Figure 4: The distribution of participants' age.

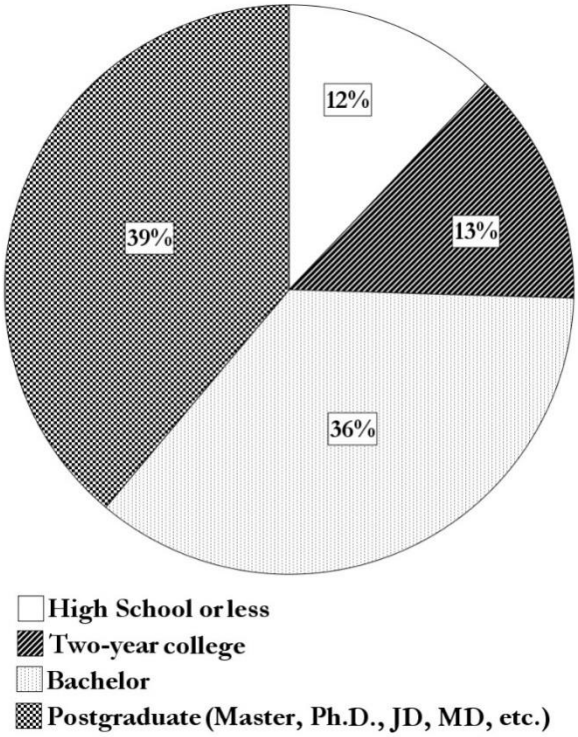

Figure 5: The pie graph, representing the education levels of the respondents.

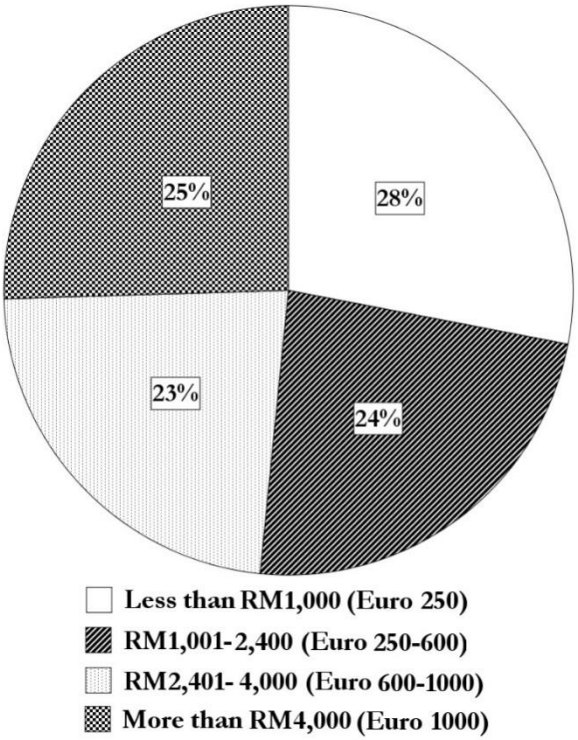

Figure 6: The monthly income distribution among the participants.

The majority of the participants (approximately 69%) indicated that they have previously used the internet for purchase of products or services.

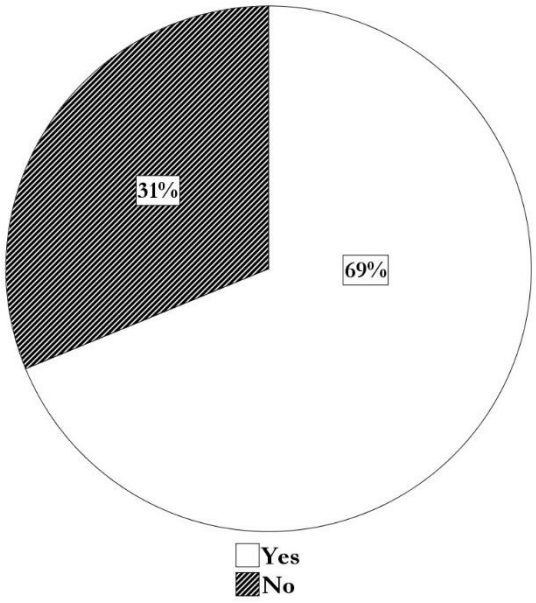

Figure 7: The participants' prior experience of online shopping.

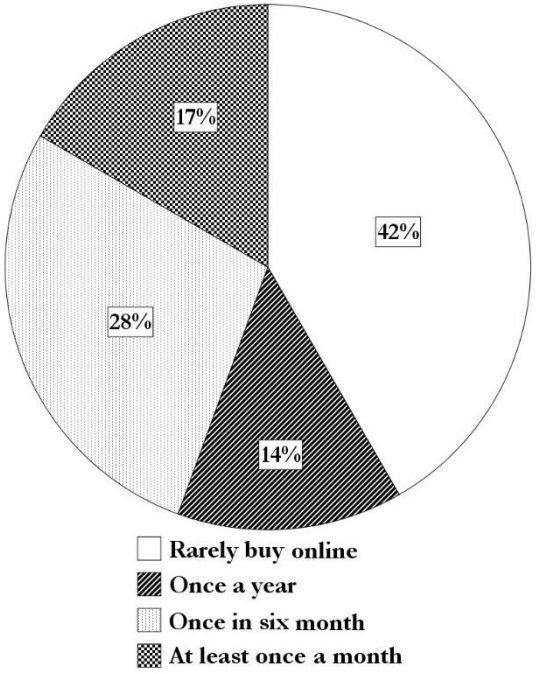

Figure 8: The frequency of online shopping among the respondents who have previously used this shopping channel.

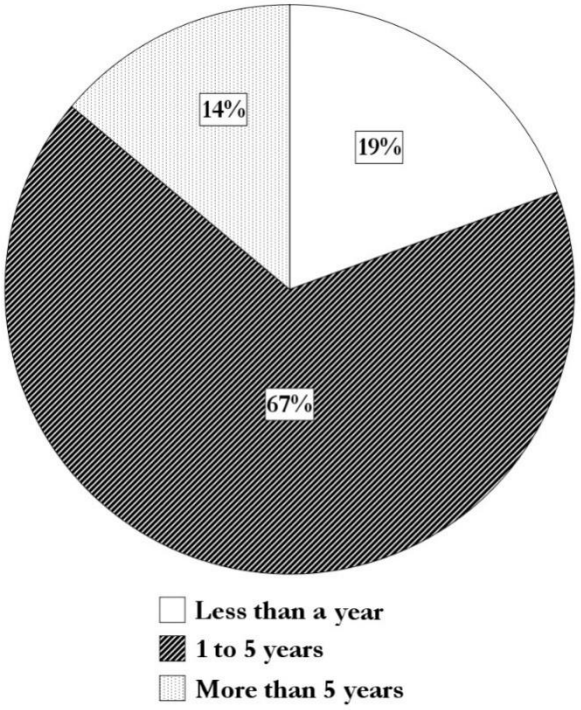

Figure 9: The duration of respondents' experience for online shopping.

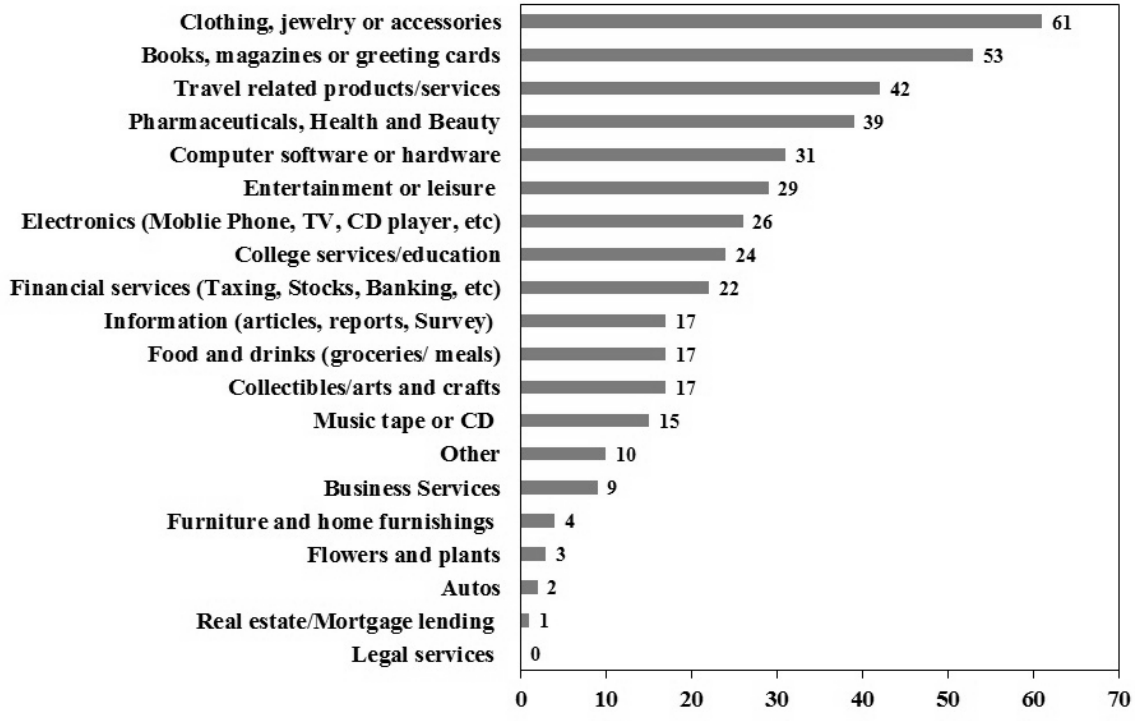

Figure 10: The popularity of online shopping of various product/service categories among the questionnaire participants.

This fact is again confirmed by the results obtained revealing that a considerable portion of the respondents (34.3%) who had experience online shopping have applied this channel for the purchase of pharmaceuticals, health, and beauty products.

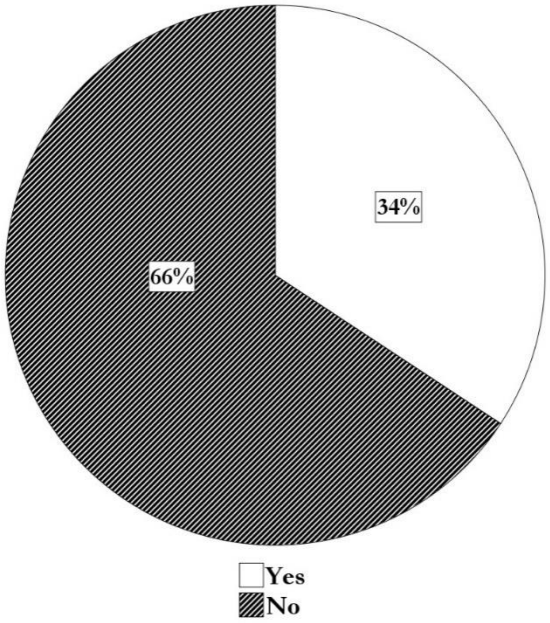

Figure 11: The portion of respondents with prior online shopping experience who have purchased pharmaceutical, health, and beauty products online.

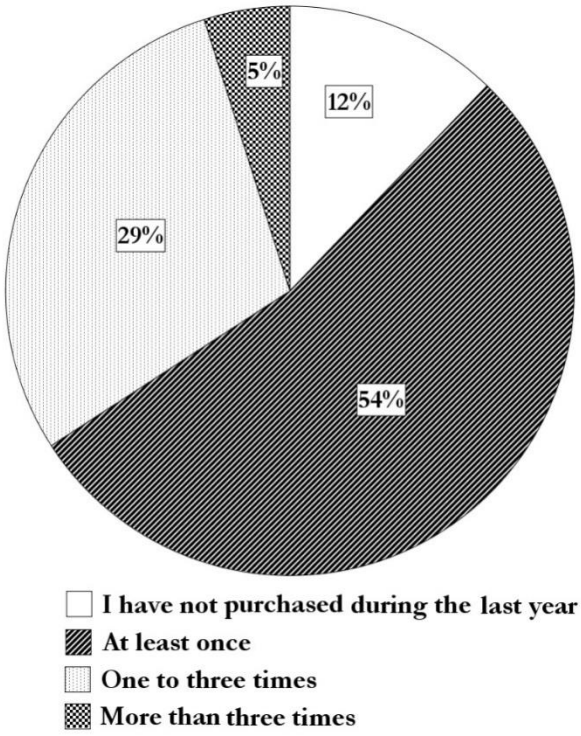

Figure 12: The frequency of online shopping of pharmaceuticals, health, and beauty products among the respondents with experience of online shopping of these products.

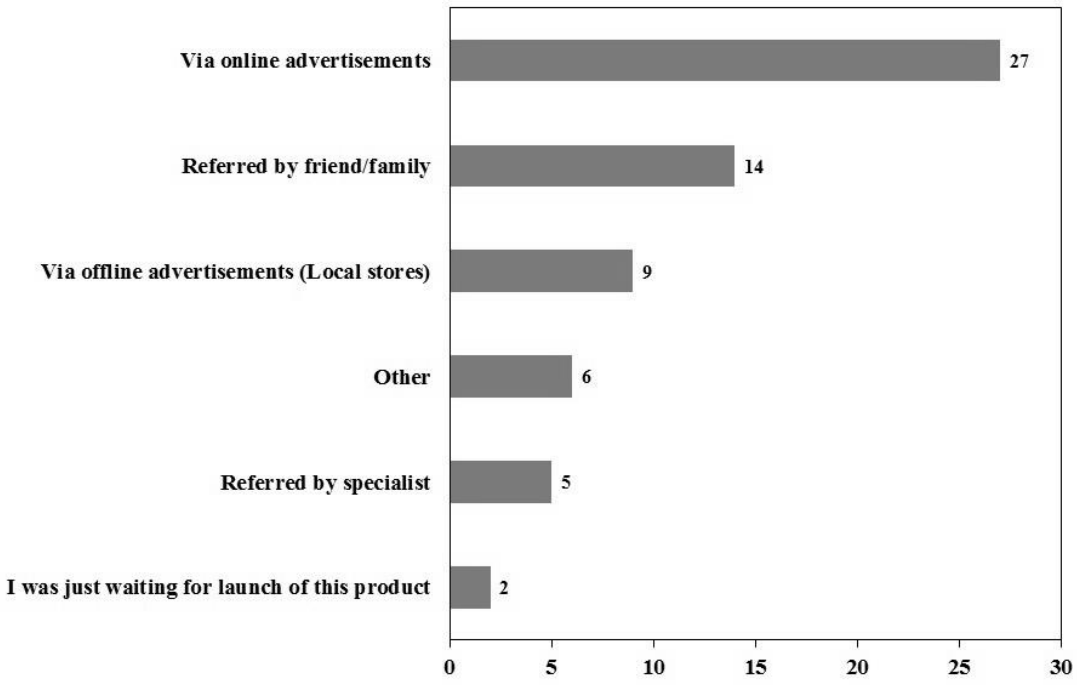

Figure 13: The popularity of various incentives among participants for online shopping of medicaments.

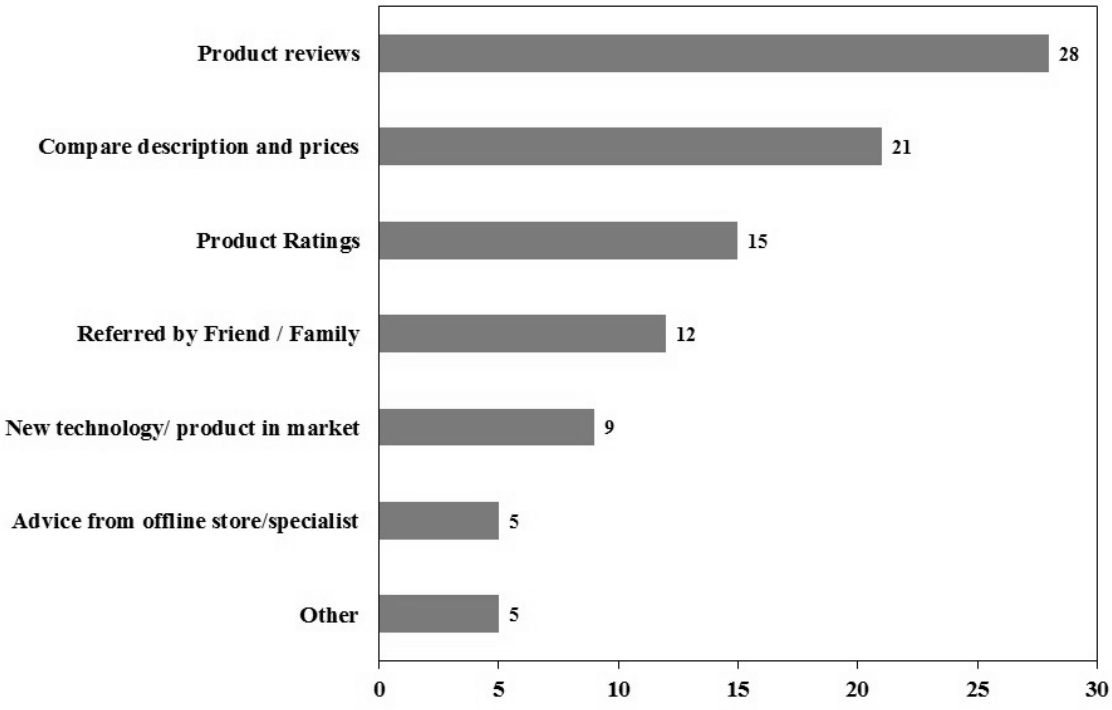

Figure 14: The popularity of various ways among respondents to ensure the suitability of an offered medicament for their needs.

After performing the PCA analysis, a determinant of 0.089 for the Pearson correlation coefficients matrix was obtained, which confirmed the unimportant degree of multicollinearity in our data. Moreover, both Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.672), as well as the Bartlett's test of sphericity ($P<0.05$) demonstrated the validity of PCA analysis for our collected data.

Table 1: Descriptive analysis of the items of "Website Awareness".

Item	Mean	SD	Skewness	Kurtosis
WA1. Drugs, healthcare products, and cosmetics that are advertised and sold in the well-known manufacture websites (Merck, Johnson & Johnson, Pfizer, L'Oreal, etc) are more trustful and less likely to be "fake" products.	3.71	1.002	-0.546	-.112
WA2. Drugs, healthcare products, and cosmetics that are advertised and sold in the well-known retailers' websites (ebay, Amazon, Guardian, etc) are more trustful and less likely to be "fake" products.	3.12	1.064	-0.277	-0.648
WA3. Drugs, healthcare products, and cosmetics that are advertised and sold in the websites located in the less-developed countries are less reliable and more likely to be "fake".	3.71	0.968	-0.513	-0.296
WA4. Drugs, healthcare products, and cosmetics that are advertised and sold in anonymous websites which may not have approval from legitimate authorities (e.g. FDI, SIRIM) are less reliable and more likely to be "fake".	4.17	0.986	-1.111	0.574
WA5. The sellers who keep the personal information about my health confidential, are more reliable.	4.04	1.018	-0.778	-0.383
WA6. If I know a reliable website who offers my needed products, I do not need to visit other online stores to distinguish between "fake" and "original" product.	4.07	0.962	-0.974	0.481
WA7. The websites that enable a two-way communication before purchase (via address, contact no., email, chat, etc.) between the customers and the seller, are more reliable.	3.38	0.977	-0.440	-0.038
WA8. My ability to give feedback or complaints to the seller after purchasing the item increases the reliance on the seller.	3.57	0.995	-0.601	-0.056
WA9. The websites that enable an immediate communication before and after purchase between the seller and customer are more reliable.	3.41	1.050	-0.342	-0.417
WA10. Providing an online consultation with a specialist through website, will increase my trust to the website and its products.	3.54	1.065	-0.448	-0.415

The outcome of the PCA analysis on 10 individual items of the WA construct showed that all of the items provided sufficient pair wise values of Pearson correlation coefficient (0.30-0.70). Furthermore, all the items produced suitable ranges of communalities (0.446-0.707) and factor loadings (0.575-0.831). The various items of WA construct have been loaded onto three major factors, with Eigen values higher than 1.0. These factors in our study were designated as: 1) Website Interactivity, 2) Website Reliability, and 3) Website Brand, which collectively explained around 59% of the total variance. The obtained results for Cranach alpha (α) are presented. As seen, the α values of all three factors exceed 0.50, which demonstrates the internal consistency of variables in each factor. As mentioned previously, the obtained factors describe around 59% of the total variance.

Table 2: The results of principal components analysis on the items of "Website Awareness".

Item No.	Item Abbreviation	Loading	α	Eigen-value	Variance
Website interactivity			0.763	2.442	24.421
WA7	Communication before purchase	0.831			
WA8	Communication after purchase	0.746			
WA9	Immediate communication	0.787			
WA10	Online contact with a specialist	0.634			
Website Reliability			0.646	1.979	19.787
WA3	Location	0.732			
WA4	Legitimacy	0.784			
WA5	Security of customer Information	0.622			
WA6	Reliability of provided information	0.575			
Website Brand			0.607	1.517	15.166
WA1	Manufacturer's fame	0.818			
WA2	Retailer's fame	0.802			

The values of Pearson correlation coefficient matrix (0.398-0.487), determinant (0.254), KMO (0.747), and Bartlett's test of sphericity ($P<0.05$) confirmed the validity of PCA analysis on our data. Therefore, this factor could be called "Unavailability of Medicaments", which describes 63.394% of the total variance. The reliability analysis also provided a Cronbach alpha of 0.807, showing a satisfactory level of internal consistency between these four items.

Table 3: Descriptive analysis of the items of "Unavailability of Medicaments".

Item	Mean	SD	Skewness	Kurtosis
UM1. Online shopping encourages me to expose myself to the drugs, healthcare products, and cosmetics, which are only available online.	3.07	1.161	-0.063	-0.751
UM2. Online shopping encourages me to buy drugs, healthcare products, and cosmetics, which are not still available in my country.	3.27	1.180	-0.358	-0.7003
UM3. Online shopping encourages me to buy drugs, healthcare products, and cosmetics, which are not approved in my country.	2.64	1.277	0.317	-0.977
UM4. Online shopping encourages me to buy drugs, healthcare products, and cosmetics, which are available in my country but need prescription from a physician.	3.05	1.234	-0.098	-0.991

Table 4: Principal components analysis on the items of "Unavailability of Medicaments".

Item No.	Item Abbreviation	Loading	α	Eigen-value	Variance
Unavailability of Medicaments			0.807	2.536	63.394
UM1	Availability only at online stores	0.696			
UM2	Unavailability at customer's location	0.815			
UM3	Unapproved at customer's location	0.850			
UM4	Necessity of prescription to buy	0.816			

Table 5: Descriptive analysis of the items of "Lack of Embarrassment".

Item	Mean	SD	Skewness	Kurtosis
LE1. Online shopping encourages me to buy drugs, healthcare products, and cosmetics, which are embarrassing, and I feel shy if my friends/family know that I buy and use these products.	3.14	1.222	-0.144	-0.862
LE2. Online shopping encourages me to buy drugs, healthcare products, and cosmetics, which need prescription, but I feel shy to ask from a physician.	3.10	1.213	-0.207	-0.954
LE3. Online shopping encourages me to buy drugs, healthcare products, and cosmetics, which I feel shy to buy them from traditional pharmacies.	3.22	1.185	-0.161	-0.852

It should be pointed out that the Pearson correlation coefficients of the items of this construct were 0.633-0.730, with a matrix determinant value of 0.219. Moreover, the obtained value of KMO test was 0.727, and the Bartlett's test of sphericity was significant ($P<0.05$).

The data presented in this table demonstrated that all three items of this construct have been loaded on one factor, which approximately defines 79% of the total variance. The Cronbach alpha was close to 0.90, showing a high internal consistency between these items. Based on this table, shyness from physicians resulted in the highest loading (0.915), followed by shyness from salespeople, and shyness from acquaintances.

Table 6: The results of the principal components analysis on the items of "Lack of Embarrassment".

Item No.	Item Abbreviation	Loading	α	Eigen-value	Variance
Lack of Embarrassment			0.870	2.382	79.397
LE1	Shyness from acquaintances	0.874			
LE2	Shyness from physicians	0.915			
LE3	Shyness from salespeople	0.884			

As seen, "the needed pre-purchase information" factor could describe a slightly higher ratio of the total variance (approximately 36%) compared to the "product appropriateness" (about 33%), which shows the significant impact of

information flow on the customers' perceived risk when shopping online for medicaments. Both these factors could describe around 69% of the total variance.

Table 7: Descriptive analysis of the items of "Uncertainty".

Item	Mean	SD	Skewness	Kurtosis
UC1. inability to touch, see, and test the drugs, healthcare products, and cosmetics before buying online, increases the risk of buying fake product.	4.03	1.015	-0.846	-0.067
UC2. The new products that are sold in the online stores but may not have approval in my country yet, could be dangerous for my health.	4.18	0.932	-1.243	1.485
UC3. The information provided by the online sellers of the drugs, healthcare products, and cosmetics is mostly enough.	2.60	1.031	0.087	-0.778
UC4. Word-of-mouth endorsements (product reviews) from other users decreases my uncertainty about the effectiveness and safety of the product.	3.47	0.984	-0.328	-0.535
UC5. Positive comments from the licensed raters decrease my uncertainty about the effectiveness and safety of the product.	3.71	0.981	-0.552	-0.325

Table 8: The results of principal components analysis on the items of "Uncertainty".

Item No.	Item Abbreviation	Loading	α	Eigen-value	Variance
Needed Pre-Purchase Information			0.653	1.800	35.995
UC3	Sufficiency of seller's information	0.530			
UC4	Word of mouth	0.864			
UC5	Product rates	0.874			
Product Appropriateness			0.660	1.630	32.593
UC1	Pre-purchase evaluation	0.844			
UC2	Legality in the target location	0.829			

The PCA analysis was also employed to determine the underlying factors of the IC construct. This analysis resulted in pair wise Pearson correlation coefficients of 0.291 (for IC1) to 0.607. Moreover, the IC1 item (item 35 in the questionnaire) could not provide a sufficient communality (0.280) and thus, it was removed from our analysis. Hence, the PCA analysis was repeated on the two remaining items, resulting in a determinant and KMO values of 0.631 and 0.500, respectively. The Bartlett's test of sphericity was also significant ($P<0.05$), demonstrating the validity of the PCA analysis on these two items. This factor could significantly describe the total variance (approximately 80%). Moreover, the Cronbach alpha for the items of this factor was 0.754, showing an acceptable level of consistency between these items.

V. PRINCIPAL COMPONENT ANALYSIS ON ALL ITEMS

The determinant and KMO values obtained for this PCA examination were 0.000034 and 0.727, respectively.

Table 9: Descriptive analysis of the items of "Inability to Consult and Follow-ups".

Item	Mean	SD	Skewness	Kurtosis
IC1. The side effects that may be caused by the purchased new drugs, healthcare, and beauty products increase the risk of buying them online.	3.71	1.070	-0.505	-0.254
IC2. I need consultation before and after shopping drugs, healthcare products, and cosmetics online.	3.84	0.984	-0.533	-0.342
IC3. Inability to consult with a specialist increase the risk of side effects after using these products.	3.96	0.912	-0.591	-0.187

Table 10: The results of principal components analysis on the items of "Inability to Consult and Follow-ups" construct.

Item No.	Item Abbreviation	Loading	α	Eigen-value	variance
Inability to Consult and Follow-ups			0.754	1.607	80.375
IC2	Necessity of Consultation	0.897			
IC3	Not consulting leads to side effects	0.897			

Table 11: The results of principal components analysis on all the items of this study.

Factor	Eigen-value	variance
Inability to Consult and Follow-ups	2.677	10.707
Unavailability of Medicaments	2.581	10.324
Lack of Embarrassment	2.461	9.844
Needed Pre-Purchase Information	2.290	9.161
Website interactivity	2.220	8.878
Website Reliability	1.838	7.351
Website Brand	1.570	6.278
Product Appropriateness	1.553	6.210

These factors could collectively describe around 69% of the total variable. According to this table, the "Inability to Consult and Follow-Ups" shows the highest impact on total variance (10.707%), followed by "Unavailability of Medicaments" (10.324%), "Lack of Embarrassment" (9.844%), "Needed Pre-purchase Information" (9.161%), "Website Interactivity" (8.878%), "Website Reliability" (7.351%), "Website Brand" (6.278%), and "Product Appropriateness" (6.210%). As shown in this table, the "Website Awareness" (or trust) could describe 22.507% of total variance, followed by "Uncertainty" (15.371%), "Inability to Consult and Follow-ups" (10.707%), "Unavailability of Medicaments" (10.324%), and "Lack of Embarrassment" (9.844%). Based on the data, discouraging constructs describe a higher portion of total variance (26.078%), followed by trust (22.507%), and encouraging constructs (20.168%).

Table 12: The ratio of total variance described by each construct developed in the present study.

Factor	variance
Website Awareness	22.507
Uncertainty	15.371
Inability to Consult and Follow-ups	10.707
Unavailability of Medicaments	10.324
Lack of Embarrassment	9.844

Table 13: The ratio of total variance described by trust, encouraging, and discouraging constructs.

Factor	variance
Discouraging Constructs	26.078
Trust	22.507
Encouraging Constructs	20.168

The majority of participants have indicated that it is less likely for them to purchase any medicament in the near future from the stores that offer these products online.

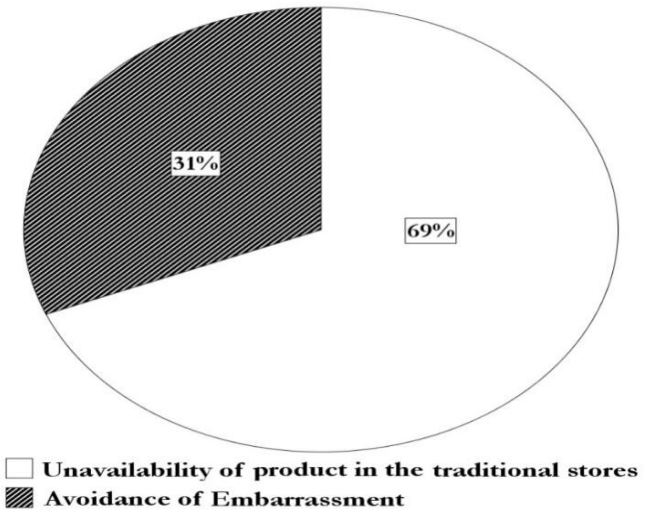

Figure 15: The respondents' opinions concerning the most affecting encouraging parameter for online shopping of medicaments.

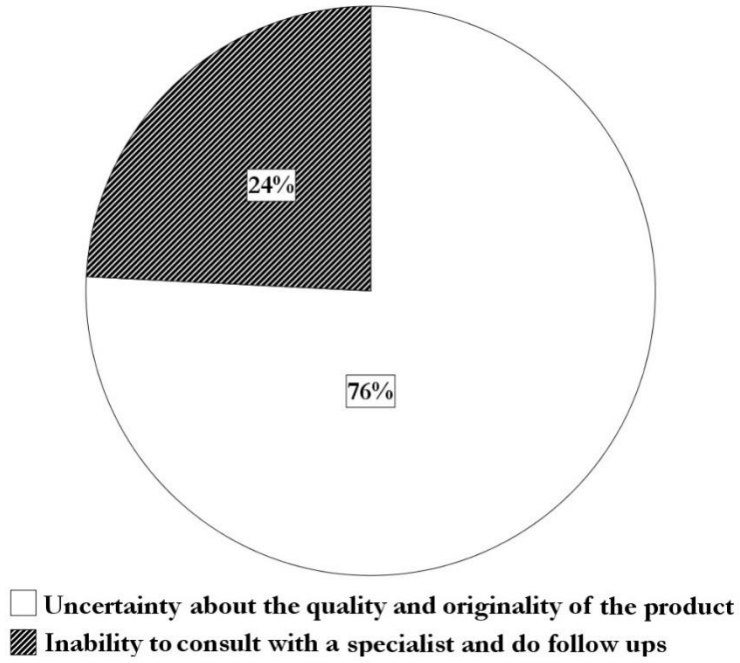

Figure 16: The participants' beliefs regarding the most influential factor discouraging them to purchase medicaments online.

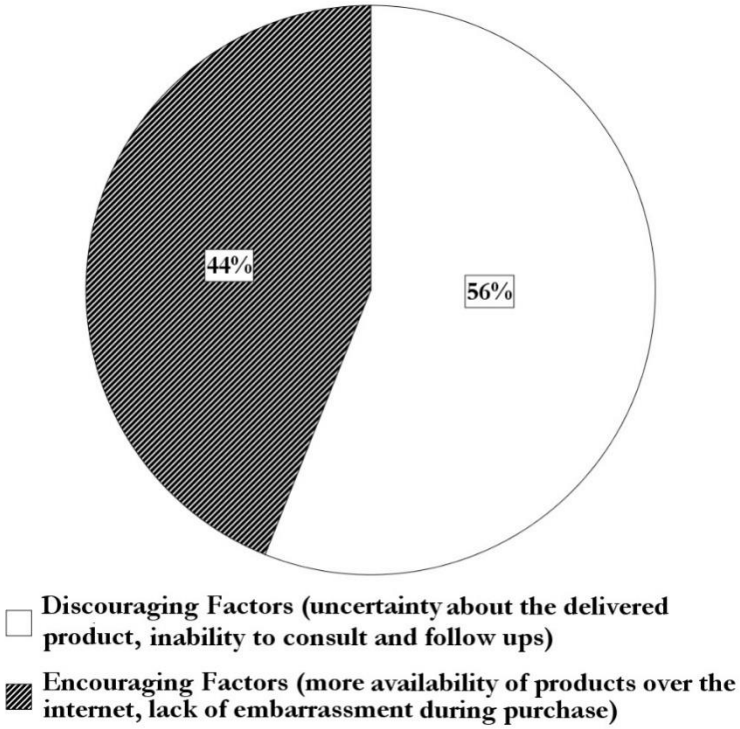

Figure 17: Participants' perceptions regarding the overall impact of discouraging and encouraging parameters on their intention to purchase medicaments online.

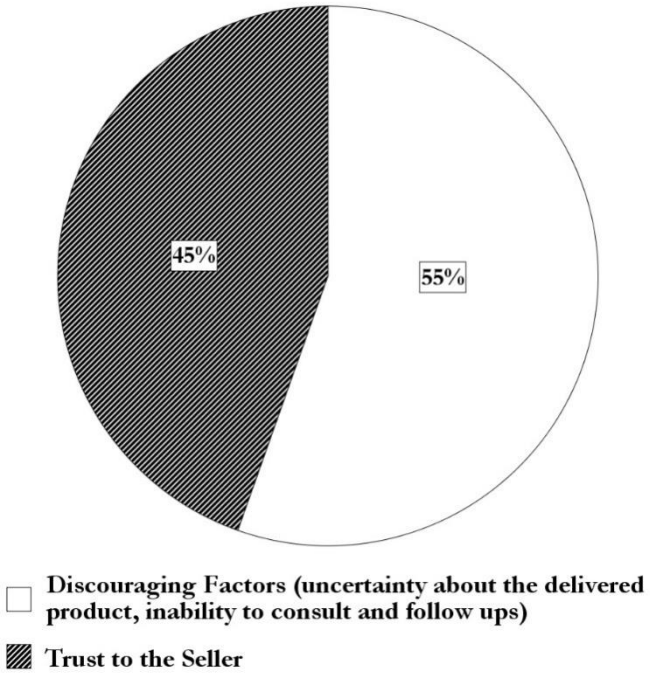

Figure 18: Participants' point-of-view in regard to the overall effects of discouraging factors, and trust on their intention to buy medicaments online.

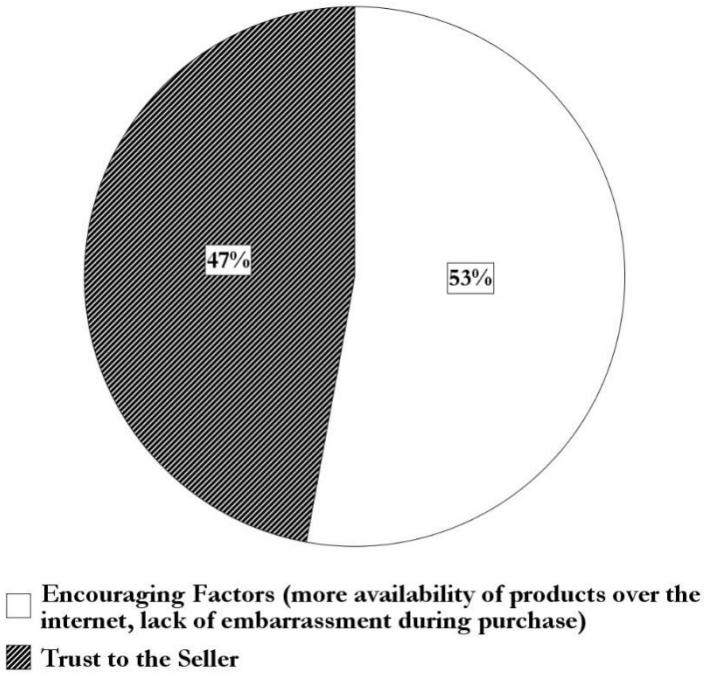

Figure 19: Participants' belief concerning the overall impacts of encouraging factors, and trust on their intention to buy medicaments online.

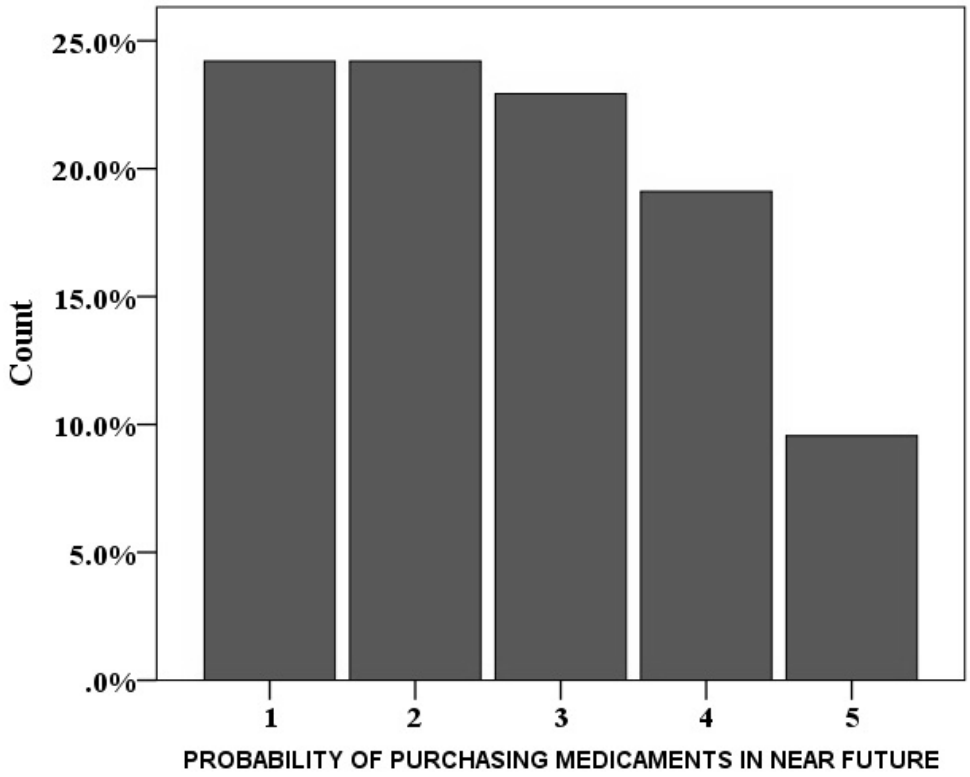

Figure 20: The probability of purchasing medicaments in the following year by the questionnaire participants.

VI. Conclusion

This thesis aimed to investigate the influences of specific factors, including the unavailability of medicament in traditional stores, lack of embarrassment in online shopping, uncertainty about the quality and effectiveness of the medicaments offered online, and the inability to consult and follow up with specialists, on the customers' perceived risk during the online purchasing of medicaments. Moreover, the influence of website awareness on the consumers' trust to online vendor was examined. The variables of this investigation were chosen after an extensive overview of the literature available in the field of online shopping of medicaments. Data collection was performed using an online questionnaire, resulting in the participation of 171 individuals. The impacts of the variables of interest were quantitatively evaluated using statistical software (SPSS). Analysis of the obtained data resulted in the following outcomes. The results of this research provides the online sellers an understanding of consumer behaviors during online shopping of medicaments, as well as the parameters that provide a more confidential environment for target buyers when trading risky products such as medicaments. The outcome of this thesis could also be used by online marketers to implement suitable strategies and tactics to decrease the level of consumers' perceived risk, thus increasing their sales via online channels. The online shopping of medicaments provides higher involvement of patients in the treatment decision-making processes, and in some cases, buying these products online can remove medical professionals from the whole procedure. Therefore, the customers should feel more responsibility in verifying that the products being offered are exactly the medications they need, and if possible, make their own decisions after consulting with health professionals. The parameters that specifically affect online shopping of pharmaceuticals (i.e. therapeutic drugs) may drastically differ from beauty and healthcare products. Further research is

required in this field to determine the influences of all specific and general parameters on online shopping of medicaments, as well as to understand the possible inter-relationship between these variables (e.g. website awareness and uncertainty).

REFERENCES

[1] Aghekyan-Simonian, M., Forsythe, S., Kwon, W. S., & Chattaraman, V. (2012). The role of product brand image and online store image on perceived risks and online purchase intentions for apparel. *Journal of retailing and Consumer Services*, *19*(3), 325-331.

[2] Almousa, M. (2011). Perceived risk in apparel online shopping: a multi dimensional perspective. *Canadian Social Science*, *7*(2), 23-31.

[3] Benazić, D., Tanković, A. Č., & Music, M. (2015). *Impact of perceived risk and perceived cost on trust in the online shopping websites and customer repurchase intention.* Paper presented at the Proceedings of the 24th CROMAR congress: Marketing Theory and Practice-Building Bridges and Fostering Collaboration.

[4] Chakraborty, R., Lee, J., Bagchi-Sen, S., Upadhyaya, S., & Rao, H. R. (2016). Online shopping intention in the context of data breach in online retail stores: An examination of older and younger adults. *Decision support systems*, *83*, 47-56.

[5] Chen, Y., Yan, X., Fan, W., & Gordon, M. (2015). The joint moderating role of trust propensity and gender on consumers' online shopping behavior. *Computers in human behavior*, *43*, 272-283.

[6] Crespo, Á. H., del Bosque, I. R., & de los Salmones Sánchez, M. G. (2009). The influence of perceived risk on Internet shopping behavior: a multidimensional perspective. *Journal of Risk Research*, *12*(2), 259-277.

[7] Dennis, C., Merrilees, B., Kim, J., & Forsythe, S. (2009). Adoption of sensory enabling technology for online apparel shopping. *European journal of marketing*.

[8] Eggert, A. (2006). Intangibility and perceived risk in online environments. *Journal of Marketing Management*, *22*(5-6), 553-572.

[9] Faqih, K. M. (2013). Exploring the influence of perceived risk and internet self-efficacy on consumer online shopping intentions: Perspective of technology acceptance model. *International Management Review*, *9*(1), 67-77.

[10] Forsythe, S. M., & Shi, B. (2003). Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research*, *56*(11), 867-875.

[11] Hong, L. M., Zulkiffli, W. F. W., & Hamsani, N. H. (2016). The impact of perceived risks towards customer attitude in online shopping. *International Journal*, *1*(2), 13-21.

[12] Huang, W. y., Schrank, H., & Dubinsky, A. J. (2004). Effect of brand name on consumers' risk perceptions of online shopping. *Journal of Consumer Behaviour: An International Research Review*, *4*(1), 40-50.

[13] Ko, H., Jung, J., Kim, J., & Shim, S. W. (2004). Cross-cultural differences in perceived risk of online shopping. *Journal of Interactive Advertising*, *4*(2), 20-29.

[14] Kumar, V., & Dange, U. (2014). A study on perceived risk in online shopping of youth in Pune: A factor analysis. *Ujwala, A Study on Perceived Risk in Online Shopping of Youth in Pune: A Factor Analysis (October 1, 2014)*.

[15] Laroche, M., Bergeron, J., & Goutaland, C. (2003). How intangibility affects perceived risk: the moderating role of knowledge and involvement. *Journal of services marketing*.

[16] Li, Y.-H., & Huang, J.-W. (2009). Applying theory of perceived risk and technology acceptance model in the online shopping channel. *World Academy of Science, Engineering and Technology*, *53*(1), 919-925.

[17] Lin, P.-J., Jones, E., & Westwood, S. (2009). Perceived risk and risk-relievers in online travel purchase intentions. *Journal of Hospitality Marketing & Management*, *18*(8), 782-810.

[18] Masoud, E. Y. (2013). The effect of perceived risk on online shopping in Jordan. *European Journal of Business and Management*, *5*(6), 76-87.

[19] Miyazaki, A. D., & Fernandez, A. (2001). Consumer perceptions of privacy and security risks for online shopping. *Journal of Consumer affairs*, *35*(1), 27-44.

[20] Mortimer, G., Fazal e Hasan, S., Andrews, L., & Martin, J. (2016). Online grocery shopping: the impact of shopping frequency on perceived risk. *The International Review of Retail, Distribution and Consumer Research*, *26*(2), 202-223.

[21] Nepomuceno, M. V., Laroche, M., & Richard, M.-O. (2014). How to reduce perceived risk when buying online: The interactions between intangibility, product knowledge, brand familiarity, privacy and security concerns. *Journal of retailing and Consumer Services*, *21*(4), 619-629.

[22] Pires, G., Stanton, J., & Eckford, A. (2004). Influences on the perceived risk of purchasing online. *Journal of Consumer Behaviour: An International Research Review*, *4*(2), 118-131.

[23] Sinha, P., & Singh, S. (2014). Determinants of consumers' perceived risk in online shopping: A study. *Indian Journal of Marketing*, *44*(1), 22-32.

[24] Tsai, Y. C., & Yeh, J. C. (2010). Perceived risk of information security and privacy in online shopping: A study of environmentally sustainable products. *African Journal of Business Management*, *4*(18), 4057.

[25] van der Heijden, H., Verhagen, T., & Creemers, M. (2001). *Predicting online purchase behavior: replications and tests of competing models.* Paper presented at the Proceedings of the 34th annual Hawaii international conference on system sciences.

[26] Wu, W.-Y., & Ke, C.-C. (2015). An online shopping behavior model integrating personality traits, perceived risk, and technology acceptance. *Social Behavior and Personality: an international journal, 43*(1), 85-97.

[27] Nguyen H.N., Tham J., Khatibi A., Azam S.M.F. (2019). Enhancing the capacity of tax authorities and its impact on transfer pricing activities of FDI enterprises in Ha Noi, Ho Chi Minh, Dong Nai, and Binh Duong province of Vietnam , Management Science Letters

[28] Nikhashemi S.R., Paim L., Haque A., Khatibi A., Tarofder A. K. (2013). Internet technology, Crm and customer loyalty: Customer retention and satisfaction perspective , Middle East Journal of Scientific Research

[29] Pathiratne S.U., Khatibi A., Md Johar M.G. (2018). CSFs for Six Sigma in service and manufacturing companies: an insight on literature, International Journal of Lean Six Sigma

[30] Seneviratne K., Hamid J.A., Khatibi A., Azam F., Sudasinghe S. (2019). Multi-faceted professional development designs for science teachers' self-efficacy for inquiry-based teaching: A critical review, Universal Journal of Educational Research

[31] Sudari S.A., Tarofder A.K., Khatibi A., Tham J. (2019). Measuring the critical effect of marketing mix on customer loyalty through customer satisfaction in food and beverage products, Management Science Letters

[32] Tarofder A.K., Haque A., Hashim N., Azam, S. M. F., Sherief S. R. (2019). Impact of ecological factors on nationwide supply chain performance, Ekoloji