

## **The Adoption of Digital Marketing for Medical Nutrition Products in Vietnam: a case of Medical Doctor**

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### **Abstract**

Digital marketing is a concept that widely acknowledge and known by business entities in B2C market to market their products, nevertheless the digital marketing concept is still difficult to be adopted by the more orthodox and conventional world of Medical Doctor. This study aims to understand the acceptance driver of digital marketing usage of medical nutrition products among medical doctors. The Unified Theory of Acceptance and User of Technology (UTAUT) is adopted and extended by adding the anxiety variable. A structured self-administered questionnaire was sent to 70 medical doctors in Ho Chi Minh and Hanoi. The study employs variance-based structural equation modelling analysis with the SmartPLS software to test the hypotheses. The study found that drivers for the successful adoption of medical nutrition's digital marketing among medical doctor are e-commerce's performance expectancy and social influence. Both drivers have a positive effect on the user's behavior intention and adoption of medical nutrition's digital marketing activities. This study provides empirical evidence of how the UTAUT concept can predict and explain the behavior of Medical Doctor upon using digital marketing to provide better service to their patients.

**Keywords:** Digital Marketing, UTAUT, Medical Doctor, Nutrition Product, Vietnam.

## 1. Introduction

Digital marketing has been found beneficial in boosting sales, cutting expenses, generating consumer knowledge, establishing customer connections, offering value, and strengthening the brand value (Chaffey & Smith, 2017). Thus, it has been adopted widely by numerous business entities in the B2C market (Ashley & Tuten, 2015). Nevertheless, a barrier prevents larger adoption of this concept in B2B market. Due to the context of the business that provides a specific service to a particular customer, their more conventional business culture and capabilities, as well as the external factor of consumer characteristics and the nature of the industry (Setkute & Dibb, 2022). Similar to the B2B market, the conventional health service shares similar conventional characteristics and rely heavily on the doctor's reputation (Torres, Vasquez-Parraga, & Barra, 2009). The marketing side from the medical doctor's perspective is unique as it involves referrals from fellow medical practitioners and external entities such as insurance companies (Kumar, Cohen, & Rajan, 2015). This referral phenomenon is also happening for pharmaceutical products that "conventionally" are suggested by the pharmaceutical company to be prescribed to the patients (Rutledge et al., 2003).

Nevertheless, in this digital era, it is challenging to avoid digitalization. Digitalization has also reached the conventional medical doctor world (Schmitz-Grosz, 2021). This phenomenon also affected how the pharmaceutical company refers to a particular product to the medical doctor from a "conventional" personal approach to a digital platform. Digitalization exposure also occurs among medical doctors in emerging economies, particularly Vietnam. The universal health care system in the country has worked well and improved thanks to the national health care reform that allows a mix of public-private health care to be available to the public (Le et al., 2010). The relatively recent adoption of the private health care system coupled with the digitalization of pharmaceutical marketing platforms would challenge Vietnamese medical doctors with a pretty conventional mindset.

This study seeks to test the drivers for the successful adoption of the pharmaceutical digital marketing effort by using The Unified Theory of Acceptance and User of Technology (UTAUT) concept. The study focuses on medical nutrition products due to their importance in preventing malnutrition that often happens in developing countries. Malnutrition is seriously prevalent among hospitalized patients, leading to worsening disease, mortality, and high hospitalization costs (Inciong et al., 2020; Rodríguez-Sánchez et al., 2020). Loan et al. (2018) also highlighted the importance of nutritional support since hospital malnutrition is common in Vietnam and the adverse outcomes for surgical cancer patients. (Loan et al., 2018)

## 2. Literature Review

### *Digital Marketing for Medical Nutrition Products in Vietnam*

Most nations enacted social life limitations and even a short economic closure during the COVID 19 epidemic (Koch et al., 2020). The Vietnamese government has implemented stringent preventative measures to avoid crowds and social exposure such as social exclusion and online shopping promotion (Pham et al., 2020). Even in underdeveloped nations where e-commerce is still in its infancy, individuals avoid physical interaction because of fear and disease, which increases online purchases (Nguyen et al., 2021). Online shopping has benefited from the rising internet penetration in Vietnam's telecommunications infrastructure (Hsu & Le, 2020). It has grown in popularity as a practical substitute for in-store purchasing (Nguyen et al., 2021). As a result, many companies have changed and adapted to provide services digitally to prevent physical interaction while protecting the security of both staff and clients (Alyahya et al., 2020).

Healthcare patients are the target market for medical nutrition products, and their demand for these items increases due to their disease and subsequent use of medical services (Dominguez Castro et al., 2020). Doctors or dietitians often recommend medicinal nutrition for malnourished individuals, such as those with chronic kidney disease (Fierini & Madill, 2020; Roumeliotis et al., 2019). A doctor's recommendation is one of the most crucial considerations when buying medical nutrition items. This is in addition to friends' recommendations, prior knowledge, brand name, expertise, and user testimonials (Srivastava & Wagh, 2017). Since not all patients can see a dietician for therapy, doctors are crucial in recognizing malnutrition despite the fact that they are not nutrition professionals like dietitians (Bell et al., 2018). Patients can purchase medical nutrition products without a prescription. However, purchasing medical nutrition products are often administered with a doctor's advice (Memisoglu, 2017). Since medical nutrition products are administered with a doctor's supervision and doctors' opinions are highly valued, pharmaceutical businesses supplying medical nutrition are very cautious in their digital transformation (Narayan et al., 2020). Particularly given that telemedicine adoption has stalled and was significantly slower before the epidemic (Cimperman et al., 2016; Schmitz et al., 2022).

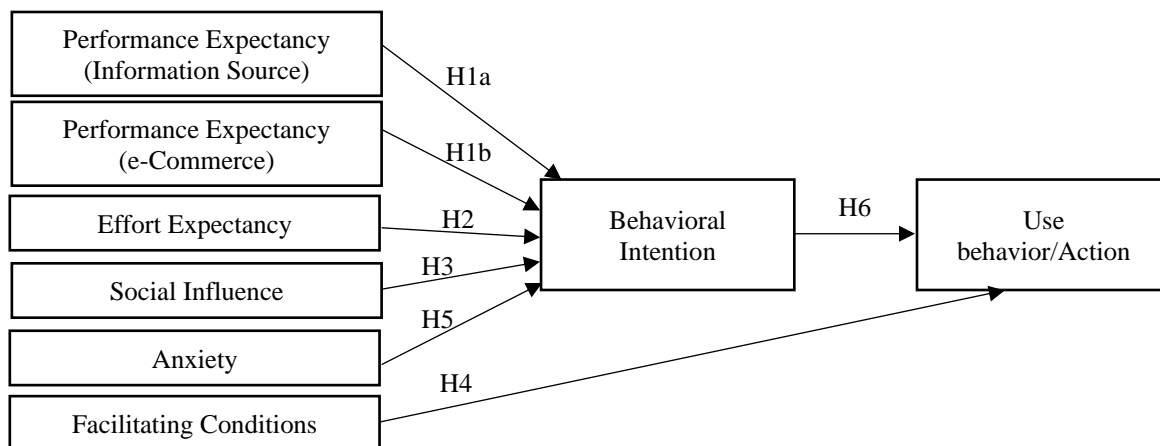
Based on the systematic review done by Anis & Hassali (2022), there are significant knowledge gaps in pharmaceutical digital marketing since there are only fourteen research and four belong to the same author in the last 20 years (Anis & Hassali, 2022). This study explored digital marketing's adoption driver for medical nutrition products in Vietnam from a medical doctor's point of view due to the need to do the digital business transformation in the pharmaceutical industry.

### *Utaut*

The Unified Theory of Acceptance and Use of Technology (UTAUT) is used in this study as a model to explain factors affecting the adoption of digital marketing amongst doctors in Vietnam for medical nutrition. The UTAUT model is widely used to explain the adoption of new technology (Dwivedi et al., 2020; Patil et al., 2020; Venkatesh et al., 2016). Venkatesh et al. (2003) first introduced the model, which was later expanded to include UTAUT2 (Venkatesh et al., 2012). Venkatesh et al. (2016), report that there were 1,267 UTAUT citations up to 2014, 12 papers that utilized the entire or partial UTAUT model in a specific situation, and 37 UTAUT extensions; that add new exogenous, endogenous, moderation, or outcome terms to the UTAUT baseline model. Many researchers confirmed the robustness of the UTAUT model (Venkatesh et al., 2016) as the original UTAUT could explain 77 percent of the variance in behavioral intention, 52 percent in using technology (Venkatesh et al., 2003)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is the concept that predicts the acceptance and use of technology constructed by integrating all components across the previous eight famous theoretical models. The models are the theory of reasoned action (TRA), the technology acceptance model (TAM), the motivational model (MM), the theory of planned behavior (TPB), a model combining the technology acceptance model and the theory of planned behavior (C-TAM-TPB), the model of PC utilization (MPCU), the innovation diffusion theory (IDT), and the social cognitive theory (SCT). UTAUT identified four core determinants (performance expectancy, effort expectancy, social influence, and facilitating conditions). Performance expectancy, effort expectancy and social influence are variables to affect behavioral intention directly. This behavioral intention then influences use behaviour. Therefore, the influence of performance expectancy, effort expectancy and social influence on use behaviour is mediated by behavioral intention. The last variable, facilitating

condition affects the use behaviour directly. The model also identifies the role of gender, age, experience and voluntariness of use variables as moderating variables.



**Figure 1.** *Conceptual framework of the study*

According to the UTAUT model, Performance Expectancy (PE), Effort Expectancy (EE), and Social Influences (SI) affect Behavioral Intention (BI). The first driver, Performance Expectancy (PE), is defined as how an individual believes technology will assist in specific pursuits (Venkatesh et al., 2003). According to Venkatesh's research (Venkatesh et al., 2003), it is the key predictor of technology adoption and is supported by other prior research. For example, Cimperman et al. (2016) for telehealth services adoption, Hoque & Sorwar (2017) found comparable results for mobile health adoption, Soh et al. for online shopping, and Schimtz et al. (2022) for telemedicine adoption. In this study, PE indicates doctors' view that using digital marketing as the information source to inform and explain medical nutrition venkatesh 2012 in treating patient disease would be useful and beneficial (Dutta-Bergman, 2004; Venkatesh et al., 2012). Examples of digital marketing communication platforms are websites, email, Google, etc. In addition, doctors feel that recommending patients to buy medical nutrition online is helpful and would make patients more convenient, especially during the COVID19 pandemic (Nguyen et al., 2021; Pham et al., 2020). Therefore, the hypothesis would be as follows:

**H1a:** Performance expectancy (PE) (Information Source) will positively influence doctor behavior intention (BI) to recommend his patient buy medical nutrition online if it is already available.

**H1b:** Performance expectancy (PE) (e-Commerce) will positively influence doctor behavior intention (BI) to recommend his patient buy medical nutrition online if it is already available

The second driver is Effort Expectancy (EE), defined as the ease of using the technology (Venkatesh et al., 2003). In this study, EE reflects doctors' belief that buying medical nutrition online is simple and easy to learn. Prior research showed that although EE did not affect BI on telemedicine adoption (Schimtz et al., 2022) and online shopping (Soh et al., 2020), EE affected BI on mobile health adoption (Hoque & Sorwar, 2017) and Home telehealth (Cimperman et al., 2016).

The third driver is Social Influence (SI), defined as how much others think they should adopt the new system. (Venkatesh et al., 2003). In the study, SI reflects how much others believe medical nutrition should be bought online and whether the medical nutrition companies

are supporting it. Prior research predicting online purchasing adoption shows that SI is an essential predictor since the opinion of friends, family, and others matters to customers (Soh et al., 2020). The same thing happened, in the adoption of mobile health (Hoque & Sorwar, 2017) and home telehealth (Cimperman et al., 2016), though SI did not affect BI in telemedicine adoption (Schmitz et al., 2022). Therefore, the hypothesis of two other drivers affecting BI is:

**H2:** Effort Expectancy (EE) will positively influence doctor behavior intention (BI) to recommend his patient buy medical nutrition online if it is already available.

**H3:** Social influence (SI) will positively influence doctor behavior intention (BI) to recommend his patient buy medical nutrition online if it is already available.

A study by Beaudry et al. (2010) found that Anxiety was negatively related to new IT applications related to IT Use. Some studies extended the UTAUT models, adding anxiety variables. Several studies found that Anxiety affects internet bank adoption (Martins et al., 2014), mobile health in Bangladesh (Hoque & Sorwar, 2017), and mobile payment in India (Patil et al., 2020). Gunasinghe (2021) found that Anxiety affects the virtual learning environment in India & Sri Lanka. Since this online selling approach will not need a doctor's prescription to buy medical nutrition, doctors would feel anxious to recommend patients to buy medical nutrition. Therefore in this study, Anxiety will be added to the four essential variables that determine components of Behavior Intention (BI) as an exogenous variable, hence the hypothesis is as follows:

**H4:** Anxiety (AX) will negatively influence doctor behavior intention (BI) to recommend his patient buy medical nutrition online if it is already available.

In UTAUT, Facilitating Conditions (FC) is the driver that directly affects Action (ACT) instead of Behavior Intention (BI) and is defined as the degree to which the individual believes an organizational and technical infrastructure exists to enable technology adoption (Venkatesh et al., 2003). There are mixed results on this; Cimperman et al. (2016) found FC affects BI on home telehealth adoption, Schmitz et al. (2020) found that FC did not affect BI in telemedicine, Hoque & Sorwar (2017) found FC did not affect BI nor ACT, and Soh et al. (2020) found FC affect perception, acceptance, and willingness toward online shopping. In this study, facilitating conditions are doctors believe that there are resources available such as mobile phones, internet connections, and other infrastructure to support online shopping. It is easy to use it, and assistance available in case of difficulty. Therefore, the hypothesis is as follows:

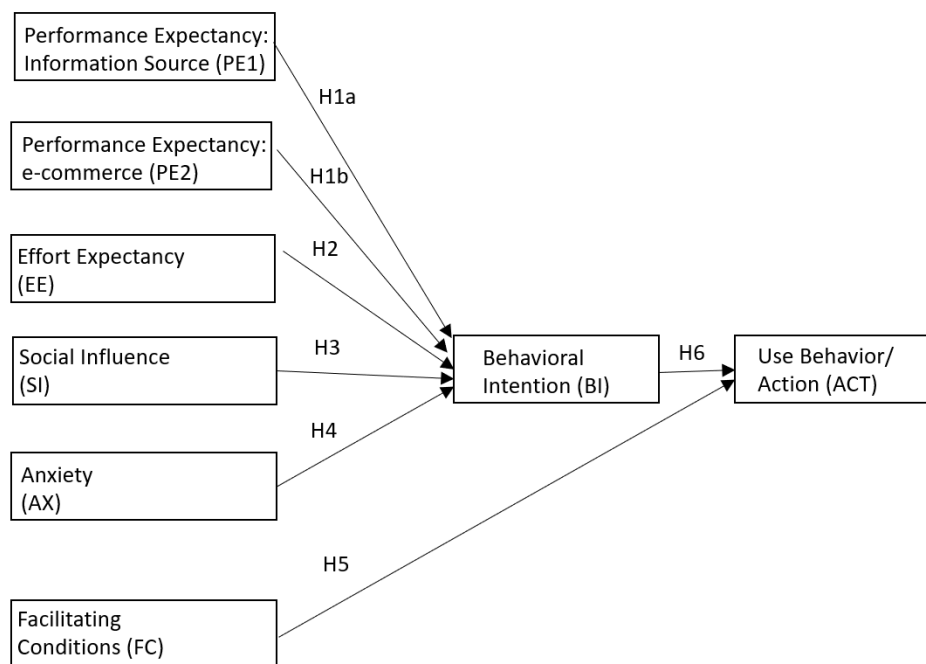
**H5:** Facilitating Conditions (FC) will positively influence the doctor's action to recommend his patients buy medical nutrition online.

Behavioral Intention (BI) has been repeatedly reported to shape actual usage and acceptance of novel systems (ACT) (Davis, 1989; Patil et al., 2020). This study uses the extensively used three-item scale from Davis et al. (1989) to measure the strength of an individual's intention to do a specific behavior. Based on research, the following theory is as proposed:

**H6:** Behavior intention (BI) to recommend buying medical nutrition online will positively influence the doctor's action to recommend his patient buy medical nutrition online

Based on the literature, the following hypothesis is proposed:





**Figure 2.** Conceptual framework of the study

### 3. Methods

The study employed a quantitative methodology in the form of a survey. Purposive sampling is used to select respondents for the survey that resulted in the participation of 70 medical doctors, of which 40 participants from Ho Chi Minh from 21 hospitals or clinics and 30 participants from Hanoi from 16 hospitals or clinics. The research was conducted for two weeks in 2 major cities in Vietnam, Hanoi in North Vietnam and Ho Chi Minh in South Vietnam. Survey pre-tested to 5 doctors who did not belong to the study hospitals. Thirteen (13) data collectors and two (2) supervisors participated in the data collection process and trained for two days to socialize the procedure. The principal supervisors give support during the survey period and monitor data collection progress. Table 1 summarizes the respondents' characteristics.

**Table 1:** Respondent profile

|                    |                   | Frequency | Percentage (%) |
|--------------------|-------------------|-----------|----------------|
| Gender             | Male              | 31        | 44             |
|                    | Female            | 39        | 56             |
| Age                | Less than 30      | 8         | 11             |
|                    | 30 to 40          | 24        | 34             |
|                    | 40 to 50          | 30        | 42             |
|                    | More than 50      | 8         | 13             |
| Year of experience | Less than 5 years | 5         | 7              |
|                    | 6-10 years        | 22        | 31             |
|                    | 11-15 years       | 18        | 26             |
|                    | 16-20 years       | 13        | 19             |
|                    | 21-25 years       | 9         | 13             |
|                    | 26-30 years       | 3         | 4              |

This study has fulfilled rules of thumb provided by Cohen (1992) based on his statistical power analyses for multiple regression models in setting the sample design. Since there are five independent variables in the measurement and structural model, the minimum sample to achieve a statistical power of 80% for detecting R<sup>2</sup> values of at least 0.25 (with a 5% probability of error) is 45 (Hair Jr. et al., 2017). Therefore the sample has passed the minimum level.

A structured self-administered questionnaire for this study was adapted from the original UTAUT's questionnaire (Venkatesh et al., 2003) prepared in English and translated to Vietnamese as the primary language. Afterward, back translation was conducted to guarantee the quality and accuracy of the translation. The five-point Likert scale was used in which scale from 1 (that indicate strongly disagree) to 5 (that indicate strongly agree). Table 2 contains information about the measuring scales.

**Table 2:** *Measurement used in the study*

| Variables  | Items   | Cronbach's Alpha<br>>0.70 | Measurement<br>Scale                                     |
|--|---|---------------------------|--|
| Performance<br>Expectancy<br>(Information<br>source)   | I would find the website/email/google search are useful to inform and explain medical nutrition in treating patient disease (PE1).              | 0.94                      | Likert scale 1–5<br>(Strongly Agree – Strongly Disagree) |
|  | Using the website/email/google search enables me to explain the importance of medical nutrition products more quickly (PE2).                    |                           |  |
|  | Using the website/email/google search enables me to recommend more patients to consume medical nutrition products to treat their disease (PE3). |                           |  |
| I would find social media (e.g., Facebook, Instagram) Useful to inform and explain medical nutrition in treating patient disease (PE4).                  |   |                           |  |
| Using social media (e.g., Facebook, Instagram) enables me to explain the importance of medical nutrition products more quickly (PE5).                    |   |                           |  |
| Using social media (e.g., Facebook, Instagram) enables me to recommend more patients to consume medical nutrition products to treat their disease (PE6). |   |                           |  |
| Performance<br>Expectancy (e-commerce)   | I would find e-commerce (e.g., Lazada, Shopee, Tiki) useful to enable patients to purchase medical nutrition products as an                     | 0.87                      | Likert scale 1–5<br>(Strongly Agree – Strongly Disagree) |

|                        |  |      |  |
|------------------------|--|------|--|
| Effort Expectancy      | <p>alternative point of purchase (PE7).<br/>Using e-commerce (e.g., Lazada, Shopee, Tiki) would make patients more comfortable as it would reduce the patient's waiting time in pharmacy or hospital (PE8).<br/>If medical nutrition product is available on e-commerce (e.g., Lazada, Shopee, Tiki), more patients will purchase medical nutrition products (PE9).<br/>I would find buying medical nutrition product online is clear and understandable (EE1).<br/>It would be easy for me to become skillful to buy medical nutrition product online (EE2).<br/>I would find buying medical nutrition online is easy to use (EE3).</p> | 0.94 | Likert scale 1–5<br>(Strongly Agree – Strongly Disagree) |
| Social Influence       | <p>Learning to buy medical nutrition online is easy for me (EE4).<br/>People who influence my behavior think that I should buy medical nutrition online (SI1).<br/>People who are important to me think that I should buy medical nutrition online (SI2).<br/>The senior management of the medical nutrition business has been helpful in facilitating the online transaction (SI3).<br/>In general, medical nutrition companies has supported the use of the online transaction (SI4).<br/>I feel doubt about the idea of buying medical nutrition online (AX1).</p>  | 0.89 | Likert scale 1–5<br>(Strongly Agree – Strongly Disagree) |
| Anxiety                | <p>I hesitate with the idea of buying medical nutrition online considering their disadvantages (e.g. bonus redemption, e-voucher complexity) (AX2).<br/>The online transaction system is somewhat intimidating to me (AX3).</p>  | 0.78 | Likert scale 1–5<br>(Strongly Agree – Strongly Disagree) |
| Facilitating Condition | <p>I have the resources necessary to buy medical nutrition online (FC1)</p>  | 0.64 | Likert scale 1–5<br>(Strongly Agree – Strongly Disagree) |



|                      |  |      |   |
|----------------------|--|------|---|
|                      | Buying medical nutrition online is not as easy as buying medical nutrition offline (FC3).            |      |   |
|                      | A specific person (or group) is available for assistance with online transaction difficulties (FC4). |      |   |
|                      | I intend to recommend my patient to buy medical nutrition online if it's already available (BI1).    |      |   |
| Behavior Intention   | I predict I would recommend buying medical nutrition online if it's already available (BI2)          | 0.98 | Likert scale 1–5 (Strongly Agree – Strongly Disagree) |
|                      | I plan to recommend buying medical nutrition online if it's already available (BI3).                 |      |   |
|                      | I recommended my patient to buy medical nutrition online (ACT1).                                     |      |   |
| Use Behavior /Action | I have recommended my patient to buy medical nutrition online (ACT 2).                               | 0.98 | Likert scale 1–5 (Strongly Agree – Strongly Disagree) |
|                      | I have never recommended my patient to buy medical nutrition online (ACT3).                          |      |   |

This study employed Partial Least Square-Structural Equation Modelling (PLS-SEM) which maximize the explained variance of the dependent latent constructs, appropriate for exploring the extension of the existing UTAUT theory (Hair Jr. et al., 2017) by using SmartPLS3. Following that, data analysis was performed using the SmartPLS program. Cronbach's alpha ( $\alpha$ ), convergence validity, average variance extracted (AVE), latent variable correlation, and R-squared ( $R^2$ ) value are all used to test the model as well as to test the hypotheses in this study.

## 4. Results

Two software were utilized to analyze the data. First, SPSS version 27 was used to analyze the adequacy of the sampling data and exploratory factor analysis (EFA).

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) ranges between 0.607 and 0.865 for most of the factor, indicating that the sample size is sufficient for exploratory factor analysis. Only 2 factors slightly below 0.6, which are Anxiety (0.527) and Use Behavior / Action (0.536). Direct Oblimin was utilized as the principal component analysis to determine if each construct contained multiple factors in the exploratory factor analysis (EFA). The Cronbach's alpha reliability coefficient ( $\alpha$ ) is above the acceptable limit (0.6) for all factors, except FC\_3R, which is the negative wording question in this questionnaire; therefore, FC3R is being removed from this model (Suárez-Alvarez et al., 2018). The analysis demonstrates that there is no unidimensionality problem, and all factors are valid and reliable.

**Table 3: Exploratory Factor Analysis**

| No | Factor name                                       | Items       | KMO   | Variance Explained | Factor | Cronbach's Reliability Coefficient |
|----|---|-------------|-------|--------------------|--------|------------------------------------|
| 1  | Performance Expectancy (PE)                       |             |       |                    |        |                                    |
|    | Performance expectancy: information source (PE 1) | PE1-PE6     | 0.865 | 0.765              | 1      | 0.938                              |
|    | Performance expectancy: e-commerce (PE2)          | PE7-PE9     | 0.607 | 0.798              | 1      | 0.868                              |
| 2  | Effort Expectancy (EE)                            | EE1-EE4     | 0.857 | 0.838              | 1      | 0.934                              |
| 3  | Social Influence (SI)                             | SI1-EI4     | 0.628 | 0.745              | 1      | 0.882                              |
| 4  | Facilitating Condition (FC)                       | FC1-FC4     | 0.614 |                    | 2      |                                    |
|    | - Facilitating Condition (FC1)                    | FC1,FC2,FC4 |       | 0.49               |        | 0.724                              |
|    | - FC_3R (FC2)                                     | FC3R        |       | 0.273              |        | ---                                |
| 5  | Anxiety (AX)                                      | AX1-AX3     | 0.527 | 0.615              | 1      | 0.68                               |
| 6  | Behavior Intention (BI)                           | BI1-BI3     | 0.753 | 0.954              | 1      | 0.975                              |
| 7  | Use Behavior / Action (ACT)                       | ACT1-ACT3R  | 0.536 | 0.717              | 1      | 0.792                              |

Table 4 described the measurement model result analysis by using SMARTPLS3 after one construct was eliminated (FC3R) in the exploratory analysis. A measurement model is utilized to ensure the validity and dependability of the obtained data. Three of the thirty indicators are eliminated, which are AX3, FC2, and ACT3R because their outer factor loading is less than 0.7 which is lower than the recommended value. Cronbach's alpha are all above 0.64 which is acceptable with Composite Reliability above 0.84 and AVE > 0.72, which are all above the recommended guideline (CR > 0.7 & AVE > 0.5) (Hair et al., 2019). Thus, it can be concluded that all constructs and items in this study are valid and reliable.

**Table 4:** *Descriptive Statistic and the Measurement Model*

| Constructs  | Items | Factor Loadings | Cronbach's Alpha | Composite Reliability | Average Variance Extracted (AVE) |
|---|-------|-----------------|------------------|-----------------------|----------------------------------|
| Performance Expectancy: Information source (PE 1) | PE1   | 0.83            | 0.94             | 0.95                  | 0.76                             |
|   | PE2   | 0.86            |                  |                       |                                  |
|   | PE3   | 0.85            |                  |                       |                                  |
|   | PE4   | 0.91            |                  |                       |                                  |
|   | PE5   | 0.88            |                  |                       |                                  |
|   | PE6   | 0.90            |                  |                       |                                  |
| Performance Expectancy: e-commerce (PE 2)         | PE7   | 0.96            | 0.87             | 0.92                  | 0.80                             |
|   | PE8   | 0.90            |                  |                       |                                  |
|   | PE9   | 0.82            |                  |                       |                                  |
| Effort Expectancy (EE)                            | EE1   | 0.92            | 0.94             | 0.95                  | 0.84                             |
|   | EE2   | 0.92            |                  |                       |                                  |
|   | EE3   | 0.91            |                  |                       |                                  |
|   | EE4   | 0.91            |                  |                       |                                  |
| Social Influence (SI)                             | SI1   | 0.90            | 0.89             | 0.92                  | 0.74                             |
|   | SI2   | 0.91            |                  |                       |                                  |
|   | SI3   | 0.81            |                  |                       |                                  |
|   | SI4   | 0.80            |                  |                       |                                  |
| Anxiety (AX)                                      | AX1   | 0.91            | 0.78             | 0.90                  | 0.82                             |
|   | AX2   | 0.85            |                  |                       |                                  |
|   | AX3   | 0.53            |                  |                       |                                  |
| Facilitating Condition (FC)                       | FC1   | 0.80            | 0.64             | 0.84                  | 0.72                             |
|   | FC2   | 0.63            |                  |                       |                                  |
|   | FC4   | 0.90            |                  |                       |                                  |
| Behavior Intention (BI)                           | BI1   | 0.97            | 0.98             | 0.98                  | 0.95                             |
|   | BI2   | 0.99            |                  |                       |                                  |
|   | BI3   | 0.97            |                  |                       |                                  |
| Use Behavior /Action (ACT)                        | ACT1  | 0.96            | 0.98             | 0.98                  | 0.95                             |
|   | ACT2  | 0.98            |                  |                       |                                  |
|   | ACT3R | 0.50            |                  |                       |                                  |

For the evaluation of discriminant validity, the Fornell-Larcker criterion was used (DV). The figure of the discriminant validity model is shown in Table 5. The square root of the AVE for each construct (bold value in table 5) is greater than inter-construct correlations (off-diagonal values), satisfying the criterion for satisfaction (Fornell & Larcker, 1981; Hair et al., 2019)

**Table 5** *Discriminant Validity Model*

|            | <b>ACT</b>   | <b>AX</b>    | <b>BI</b>    | <b>EE</b>    | <b>FC</b>    | <b>PE1</b>   | <b>PE2</b>   | <b>SI</b>    |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>ACT</b> | <b>0.982</b> |              |              |              |              |              |              |              |
| <b>AX</b>  | -0.519       | <b>0.905</b> |              |              |              |              |              |              |
| <b>BI</b>  | 0.924        | -0.576       | <b>0.977</b> |              |              |              |              |              |
| <b>EE</b>  | 0.403        | -0.138       | 0.383        | <b>0.915</b> |              |              |              |              |
| <b>FC</b>  | 0.501        | -0.267       | 0.537        | 0.432        | <b>0.851</b> |              |              |              |
| <b>PE1</b> | 0.717        | -0.453       | 0.729        | 0.303        | 0.675        | <b>0.873</b> |              |              |
| <b>PE2</b> | 0.795        | -0.512       | 0.824        | 0.466        | 0.594        | 0.788        | <b>0.893</b> |              |
| <b>SI</b>  | 0.828        | -0.55        | 0.815        | 0.426        | 0.659        | 0.836        | 0.810        | <b>0.858</b> |

The model's adjusted coefficient of determination R<sup>2</sup> is well represented, in which 73.8% of these independent variables predicted the doctor's behavior intention (BI), and 84.0% predicted that the doctor will recommend his patient to buy medical nutrition online (ACT).

The statistical significance of the proposed hypotheses of the UTAUT model are tested by using SmartPLS3 with 1,000 bootstrap resamples for testing structural models. The results of the structural relationships between the variables are highlighted in Table 6. Hypothesis 1a is performance expectancy on searching for information affects behavioral intention to recommend digital marketing to buy medical nutrition. The p(t) is 0.971. The relationship isn't significant, which is more than 0.05; therefore, we can conclude that performance expectancy on searching for information does not affect behavioral intention. Hypothesis 1b is performance expectancy on doing transaction affects behavioral intention to recommend digital marketing to buy medical nutrition. The p(t) is 0.004. The relationship is highly significant; therefore, we accept the relationship between performance expectation on doing transaction and behavioral intention. The second hypothesis is effort expectancy affects behavioral intention. The p(t) is 0.923. The relationship isn't significant, therefore, we can conclude that effort expectancy does not affect behavioral intention. The third hypothesis is that social influence affects behavioral intention. The p(t) is 0.026. The relationship is significant too; so, we accept the relationship between social influence and behavioral intention.

The fourth hypothesis is facilitating condition affect action in terms of recommending digital marketing to the patient. The p(t) is 0,921. The relationship is not significant; therefore, we conclude that facilitating condition does not affect digital marketing recommendation. The fifth hypothesis is anxiety affects behavioral intention. The p(t) is 0,094 The relation is not significant; so, we can't accept the relationship between anxiety and behavioral intention. The last hypothesis is behavioral intention affects digital marketing recommendation. The p(t) is 0.000. The relationship is highly significant; therefore, behavioral intention influences digital marketing recommendation.

**Table 6** Discriminant Validity Model

| Hypothesis number | Path Coefficient | T-Statistics | P values  | Study Result  |
|-------------------|------------------|--------------|-----------|---------------|
| H1a: PE1 => BI    | -0.007           | 0.037        | 0.971     | Not Supported |
| H1b: PE2 => BI    | 0.453            | 2.923        | 0.004 *** | Supported     |
| H2: EE => BI      | -0.008           | 0.096        | 0.923     | Not Supported |
| H3: SI => BI      | 0.381            | 2.224        | 0.026 **  | Supported     |
| H4: FC => ACT     | 0.007            | 0.099        | 0.921     | Not Supported |
| H5: AX => BI      | -0.138           | 1.677        | 0.094 *   | Not Supported |
| H6: BI => ACT     | 0.920            | 23.132       | 0.000 *** | Supported     |

\*P<0.1, \*\*P<0.05, \*\*\*P<0.001

## 5. Discussion

Data analysis revealed that the model contains two significant predictors, with 73.8 percent of these independent variables predicting the doctor's behavior intention (BI) and 84 percent predicting that the doctor will recommend his patient to buy medical nutrition online (ACT). With Performance Expectancy (e-commerce) as the primary predictor and Social Influence (SI) as the secondary predictor, these two variables provide reliable predictive power of a doctor's behavior intention (BI) to recommend online medical nutrition purchases in Vietnam. Concerning the relationship between BI and ACT, it has been reported on multiple occasions that Behavioral Intention (BI) influences the actual usage and acceptance of novel systems (ACT) (Davis, 1989; Patil et al., 2020).

The result of this study is consistent with prior research that Performance Expectancy (PE) influence BI (Anthony Jnr, 2021; Cimperman et al., 2016; Hoque & Sorwar, 2017; Schmitz et al., 2022). This study revealed that only e-commerce's performance expectancy would influence doctors' behavior intention to recommend online medical nutrition purchases in Vietnam. This also confirmed that physicians concur that purchasing medical nutrition online is advantageous and would be more convenient for patients, particularly during the COVID19 pandemic (Hsu & Le, 2020; Nguyen et al., 2021; Pham et al., 2020). This study also confirmed previous UTAUT findings (Cimperman et al., 2016; Hoque & Sorwar, 2017) that Social Influence (SI) is an important predictor because the opinion of friends, family, and others is essential to customers (Soh et al., 2020).

## 6. Conclusion

This study has successfully applied the UTAUT model in doctors' intention & action to recommend their patient to buy medical nutrition online, which is influenced by e-commerce's performance expectancy and social influence. These two variables explain 73.8% of the variance in doctors' behavioral intentions (BI) and 84 % of the variance in recommending his patient to buy medical nutrition online (ACT).

As the context has shifted to a digital environment (Anthony Jnr, 2021), this is the first study to reveal the two predictors of the doctor's intention and action to recommend that his patient purchase medical nutrition. It also removes companies' doubt related that doctor would feel anxious to recommend patients to buy medical nutrition since the online selling approach will not need a doctor's prescription to buy medical nutrition.

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