

# **Towards an economic recovery after the COVID-19 pandemic: empirical study on electronic commerce adoption by small and medium-sized enterprises in Vietnam**

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**Abstract.** *The COVID-19 outbreak has created a severe crisis for the general economic situation. Despite the short duration of the pandemic, many innovations are implemented for organizational survival and recovery in the competitive market environment of digital age. This paper aims to find out significant factors and how they impact on E-commerce adoption by small and medium-sized enterprises in Vietnam, especially during the epidemic. The results reveal that technology perceived compatibility has the greatest effect on E-commerce adoption, followed by management support and external pressure. Moreover, external support only has minor impact on E-commerce adoption during the Covid-19. Meaningfully, this study makes a contribution to both innovation literature and practical management with new insight of current Vietnamese situation for small and medium-sized organizations.*

**Keywords:** E-commerce adoption, innovation, TOE framework, small and medium-sized enterprises, COVID-19 pandemic.

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## **Introduction**

COVID-19 pandemic is considered to be the notorious economic shock arising throughout the year 2020. International and domestic lockdowns, national treasure declines, commercial business stagnancies have been globally mentioned since March when the pandemic began to spread. The worldwide economy gets under depressed situation and another crisis which is more serious than the 2008 financial slump has emerged. The impact of COVID-19 can be noticed in business areas where interaction and face-to-face negotiations have not been allowed (Farmaki et al., 2020). As predictions indicated, it is not until the year 2025 that the global economy will be able to recover to the ideal situation as it was in 2019. Therefore, although the negative effects of the deadly pandemic are still currently present, the commercial recovery phase must be projected to start due to the fact that economic development has collapsed to historic bottom (Gourinchas et al., 2020).

Particularly, the small and medium-sized enterprises (SMEs) category is among the mostly-affected enterprises because the category includes weak and average potential strength (Syriopoulos, 2020). Therefore, the recovery phase of SMEs has to reach initial stage sooner than ever.

In this study, authors concentrate on determining the effects of COVID-19 crisis on business failure, specifically on SMEs, and providing measurements for the recovery phase. As the spread of COVID-19 pandemic and the interdependence of the global economy increase the business uncertainty, predicting the future seems an impossible task. Consequently, SMEs encounter difficulties in solving several recovery-related issues. Firstly, SMEs are vulnerable to financial risks due to their remarkable dependence on leverage finance with numerous debts from banks, intermediaries or other financial supporters (Gourinchas et al., 2020). Therefore, under the impact of the COVID-19 pandemic, the money issues become worse and SMEs development is typically hindered. As a result, SMEs are unable to serve their clientele, to pay salaries to their employees and be compliant to their commitment with their suppliers (Syriopoulos, 2020). More importantly, the operations of SMEs are subjected to disruption in demand side and supply side (Juergensen et al., 2020). The corona virus spreads all over the world and leads to the situation where the demand for products from SMEs in particular and other category of enterprises in general, decline sharply in this period (Priyono et al., 2020). On the other hand, supply of inputs for SMEs encountered logistical problems due to lockdowns and isolation (Juergensen et al., 2020). Therefore, it negatively created shortage in several inputs, namely: transportation, product input or labour.

Nevertheless, whether how bad the crisis becomes, SMEs have to be focused on the recovery phase to minimize the losses afterwards. Generally, coronavirus pandemic has strong effects on SMEs and forced thousands of SMEs to fail in the market. Therefore, it is necessary for SMEs to find the fastest ways to bounce back after a downward trend throughout the year 2020. E-commerce is proven to be one of the most effective measures to overcome discontinued operations during the COVID-19 pandemic (Gao et al., 2020). In order to minimize infection spread, human-to-human transmission must be prevented and virtual platforms created using technology should be enhanced. Sellers are still able to find buyers online and provide the service with the help of specially-assisted logistics. Moreover, it is believed that digital technology enables firms to transform business models quickly, and not in traditional or linear ways (Priyono et al., 2020). Products or services are presented online, in a more visual than traditional manner. E-commerce, as a result, creates the chance of widely-served customers and increases sales volumes for a typical SME. In other words, buyer behaviours have changed and e-commerce is becoming a leading trend in market during the coronavirus epidemic. Therefore, it is the online shopping that is reshaping the economy for SMEs after the COVID-19 and the virtual platforms would provide potential recovery opportunities not only for SMEs, but also for the global economy.

Consequently, the aim of this research is to (1) identify related technological, organizational, environmental and managerial factors in e-business and (2) test the moderating effect of these factors on e-commerce adoption by Vietnamese SMEs. The next section is a literature review analyses of related papers, followed by a part of data result. Finally, this article concludes with discussion on findings and future directions. Due to the consistent duration and unprecedented nature of phenomena like COVID-19, although the

study meets several limitations, significant recommendations for the SMEs recovery phase are still proposed. Besides, the study looks at the problem from the SMEs point of view, therefore, it isn't meant to provide a policy-related resources and complete measurements that SMEs can implement for recovering after COVID-19 pandemics. The results are acknowledged by the authors and do not violate any economic regulations.

## **Literature review**

### ***E-commerce adoption***

Electronic commerce, by definition refers to a particular component of e-business relating to the Internet contribution in terms of sale, display, information-provision, money transfer and delivery support (Kwilinski et al., 2019). More particularly, online shopping relates closely to the sharing of business information, maintaining business relations, and conducting business transactions by means of telecommunication networks (Scupola et al., 2009). In other words, the internet contributes greatly to the operation of e-commerce. The online business-to-consumer (B2C) transactions have been recognized as one of the major technological innovations altering market channels in this information age (To and Ngai, 2006). With the help of internet development, the distance between businesses and customers is narrowed and even eliminated. A person can access a large number of products online via a portable device or a laptop. The other potential benefit of adopting state-of-the-art technologies for SMEs is to enhance the digitization of internal operations and processes, improving performance effectiveness and efficiencies, re-engineering business models, and ensuring business survival (Kwilinski et al., 2019). Information technologies are used to increase sales, business efficiency and create a base for new products and services in an e-commerce process. Depending on particular activities, each company communicates with many other subjects, who can include either private or corporate clients, or business partners, suppliers (Rodgers and Harris, 2003). In other words, e-commerce is becoming more vital for business in the modern economy and online shopping seems gradually popular nowadays, when people can handle the purchase within several minutes and at a much higher productivity than physical shopping (Hui et al., 2013). Besides, with the help of the internet, sellers can place promotional deals online which are rather quick to spread in the buying environment. Moreover, online shopping is becoming more protected as more security policies are being enforced by many online marketplaces. Generally, it is beneficial for businesses to move the focus to online shopping in the changing economy, especially after the COVID-19 pandemic when people are heading online more often. However, the adoption of e-commerce encounters numerous problems.

With regard to small and medium-sized enterprises (SMEs), many challenges continue to hinder digital technology adoption, especially in the developing economies (Akpan et al., 2020). The shortage of resources is the extreme weakness of SMEs; therefore, the allocation should be reasonable and focused on important features. More importantly, the SMEs' inability to deploy cutting-edge technologies is barely possible due to the financial aspect (Akpan et al., 2020). Therefore, technologies such as virtual reality and cloud computing for remote operations and non-digitization of business activities may not be targeted. According to Rahayu and Day (2015), the adoption of e-commerce by SMEs, especially in developing countries, is still very far behind the adoption by large companies. Besides, Dubelaar et al. (2005) pointed out nine determinants preventing e-commerce adoption by SMEs, namely: the lack of human resources; internal resistance; unready

customers; lack of support; security issues; unready business partners; internal constraints; lack of IT resources and lack of support. Hence, there tends to be a lack of success stories, not having knowledge in e-commerce, and lack of information about the potential impact of e-commerce implementation for the business performance of SMEs. Generally, even though SMEs are increasingly adopting e-commerce, their use and exploitation is still limited and small-sized companies have a limited understanding of its potential (Scupola, 2009).

### ***Theoretical foundations on e-commerce adoption research***

The Technology-Organization-Environment (TOE) framework is initially developed by Tornatzky et al. (1990), illustrating the impact of external and internal factors in adopting a new type of innovation. There are three aspects in this model, including the technology aspect, organization aspect and other external aspects (such as environmental context) (Rahayu and Day, 2015). Particularly, the technological context involves internal and external characteristics of the technology of a company, whereas the organizational aspect refers to the nature, resources or managerial structure of the firm (Rahayu and Day, 2015). Besides, the environmental context is about external factors influencing firm operations such as competitors, suppliers and government policies (Zhu et al., 2006).

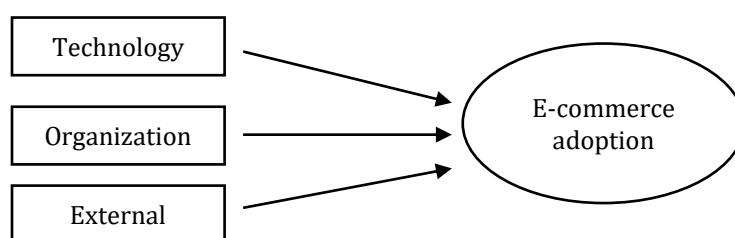


*Figure 1. The TOE framework for e-commerce adoption*

Source: Authors' own research.

In the context of e-commerce implementation, many prior researches mainly considered the TOE framework as the theoretical basis for the research model because of two key reasons (Rahayu and Day, 2015; Mohtaramzadeh et al., 2017). Firstly, TOE has been widely recognized as a well-established framework in the context of technology application in an organization (Ramdani et al., 2013; Chiu et al., 2017). Secondly, not only technological issue, but the TOE framework also covers micro and macro variables such as organizational and environmental factors (Hameed et al., 2012). Therefore, TOE has more explanatory and applied weight in research, as well as managerial implication. Due to major points, it is believed that TOE can explain IT innovation adoption in firm comprehensively. Nevertheless, there are still several gaps addressed to this theory, in which the individual characteristics of managers or staff in a company are core factors that are ignored in the model (Ghobakhloo and Tang, 2013). On the other hand, in practice, it is attributed to the fact that managers or the characteristics of managers of a firm also have significant impact on the technological implication, which is well documented in the researches of Rowe et al. (2012), Mohtaramzadeh et al. (2017) or Chiu et al. (2017). Therefore, in the case of e-commerce adoption in Vietnam, small and medium-sized enterprises, technological, organizational, environmental and individual context are taken into account as main factors.

Table 1. Summary of the factors for e-commerce application in SMEs

| Authors                                  | Main context                                                                                                                             | Main factors                                                                                                                                                                                                                                                       |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Abed (2020)                              | (1) Technological context<br>(2) Organizational context<br>(3) Environmental context                                                     | (1) Perceived usefulness, security concern<br>(2) Management support, organizational readiness<br>(3) Consumer pressure, trading partner pressure                                                                                                                  |
| Hamad et al. (2018), Ocloo et al. (2018) | (1) Technological factor<br>(2) Organization factor<br>(3) Environment factor                                                            | (1) Relative advantage, compatibility, complexity<br>(2) Management support, firm size<br>(3) Competitive pressure, business partner pressure, Government support                                                                                                  |
| Chiu et al. (2017)                       | (1) Technology context<br>(2) Organizational context<br>(3) Environment context                                                          | (1) Relative advantage, compatibility, complexity, trialability, observability<br>(2) Information intensity, management support, employee's knowledge, absorptive capability<br>(3) Competitive pressure, business partner, external supports, government supports |
| Mohtaramzadeh et al. (2017)              | (1) Technological factors<br>(2) Organizational factors<br>(3) Environmental factors<br>(4) Organizational culture                       | (1) Technology benefits, cost of adoption<br>(2) Top management support, infrastructure and capabilities<br>(3) Competitive pressure, partner pressure, legal infrastructure, government support<br>(4) Organizational culture                                     |
| Rahayu and Day (2015)                    | (1) Organizational context<br>(2) Technological context<br>(3) Environmental context<br>(4) Individual context                           | (1) Technology readiness, firm size<br>(2) Perceived benefits, perceived compatibility, cost<br>(3) Customers pressure, competitor pressure, external support<br>(4) Owners innovativeness, owners IT ability, owners IT experience                                |
| Bakri and Katsioloudes (2015)            | (1) External organizational factors<br>(2) Internal organization factors<br>(3) SMEs managers' perceptions.                              | (1) Readiness, external pressure<br>(2) SMEs strategic planning, perception of SMEs' managers<br>(3) Managers' perceptions.                                                                                                                                        |
| Ghobakhloo and Tang (2013)               | (1) Perceived benefits, (2) perceived compatibility, (3) perceived cost, (4) perceived risks, (5) computer knowledge, (6) innovativeness | (1) Perceived benefits, (2) perceived compatibility, (3) perceived cost, (4) perceived risks, (5) computer knowledge, (6) innovativeness                                                                                                                           |

Source: Authors' own research.

### ***Factors affecting e-commerce adoption by Vietnamese SMEs***

#### ***Organizational context***

The organizational context involves firm characteristics that have significant impact on the adoption of e-commerce, such as staff knowledge, firm size, firm resources, strategic orientation, or technology readiness, etc. Regarding employees of small and medium-sized enterprises, many prior researches state that internal expertise of SMEs can be considered as one of the main reasons in deciding whether to accept new technology or not, which play a key role in adopting e-commerce (Teo and Tan, 1998; Rowe et al., 2012). In practice, a number of organizations cannot attempt to implement innovation in the business context because their staff members do not have enough skills and knowledge of e-commerce or

technology (Rowe et al., 2012). Besides, Rahayu and Day (2015) also support the above-mentioned viewpoints when they reveal that the ability to provide human resources relates to a company's intention to implement e-commerce. The more skilled workers SMEs have, the more likely e-commerce adoption is. Thus, the first hypothesis is the following:

*H1: Organization employees positively influence the adoption of e-commerce by Vietnamese SMEs.*

Another important factor in organizational context is readiness, which has been researched in several papers, such as Iacovou et al. (1995), Bakri and Katsioloudes (2015) or Rahayu and Day (2015). Enterprise readiness includes financial and technological resources that are remarkably essential to approve new innovation (Bakri and Katsioloudes, 2015). To be specific, financial readiness is the availability to pay for new technology, modern equipment or up-to-date system; while technological readiness involves the level of IT usage and management in business environment (Iacovou et al., 1995). In other words, Bakri and Katsioloudes (2015) note that if a company has a low level of computerization, it will be especially sophisticated for it to adopt e-commerce or any kind of innovation technology. Furthermore, organizational readiness also refers to strategic orientation, meaning that when a firm has a proposed strategy plan about adopting new technology, it might be implemented closely based on that (Hong and Zhu, 2006; Requena et al., 2007). Consequently, organizational readiness helps speed up the e-commerce adoption process. The hypothesis is proposed as below:

*H2: Organizational readiness positively influences the adoption of e-commerce by Vietnamese SMEs.*

### *Technology context*

The technology context is about those aspects related to technological operation in e-commerce, such as benefit, compatibility, complexity or event risks (Tiago and Maria, 2010). Firstly, perceived benefits are defined as the degree of advantage a new technology can bring to a firm (Jabri and Sohail, 2012). In reality, firms will not accept a technology if it does not bring any advantages or helps to develop business opportunities (Duan et al., 2012). The greater the perceived benefit is, the more chances a firm will adopt this technology. Especially in a competitive and hard environment such as the COVID-19 pandemic, these benefits bring more motivation for the company to adopt the e-commerce system. Hence, the next hypothesis is stated as follows:

*H3: Technology perceived benefits positively influence the adoption of e-commerce by Vietnamese SMEs.*

Secondly, compatibility is another factor having great impact on e-commerce adoption by SMEs (Morteza et al., 2011). Compatibility is about whether this technology is appropriate with company structure, value, object or other external aspects (Morteza et al., 2011). Particularly, an enterprise only chooses an innovation if it meets the need of the organization and if it complies with certain internal and external values, which enable it to reduce risks and is easily to implement during the process (Rahayu and Day, 2015). Conversely, it is found that the incompatibility between e-commerce and the business picture brings a hesitation in the company's intention to accept new technology and negatively influences on workers' attitudes (Rowe et al., 2012). Given that, hypothesis 4 is suggested as below:

*H4: Technology perceived compatibility positively influences the adoption of e-commerce by Vietnamese SMEs.*

#### *Environmental context*

Among environmental characteristics, two main aspects relate to external pressure and external support that impact on e-commerce adoption (Rahayu and Day, 2015). In this study, the external pressure refers to competitors' competitiveness, customers' requirements and especially, the major influence of the COVID-19 pandemic. In fact, the coronavirus disease pandemic has created extraordinary challenges for the worldwide business environment when Governments implemented social distancing programs and travel restrictions, almost all businesses experiencing both demand and supply shocks (Chang and Meyerhoefer, 2020; WHO, 2020). Consequently, face-to-face transaction was reduced and online trading increased sharply in the economy and society (Dannenberg et al., 2020). Along with it, due to the sudden expansion of online business, there is a special competitiveness among companies. Customers, thus, also require higher quality products as well as better services (Chang and Meyerhoefer, 2020). In many cases, these facts give positive power to pressure on SMEs to adopt a new particular kind of technology. The higher the level of competition within the industry, the greater e-commerce can be achieved (Zhu and Kraemer, 2006). The next hypothesis that is proposed is the following:

*H5: External pressure positively influences the adoption of e-commerce by Vietnamese SMEs.*

In addition to pressure, support from external parties such as the Government, communities or even other businesses is also considered as one of significant factor having influence on e-commerce adoption by SMEs (Rahayu and Day, 2015). It is common knowledge that small and medium-sized companies lack resources such as financial, technological and human resources; hence, they are always in need of support from others. For example, financial policies from the Government to protect these companies during the COVID-19 pandemic, or a support from the IT vendor to learn and adopt the new technology. Hence, these explanations result in the following hypothesis:

*H6: External support positively influences the adoption of e-commerce by Vietnamese SMEs.*

#### *Management support*

Although it is not mentioned in TOE framework, many researches focus on the importance of individual context or management support in adopting E-commerce in SMEs, especially in developing countries (Rahayu and Day, 2015; Mohtaramzadeh et al., 2017). Specifically, owner/managers' knowledge is another trait having impact on e-commerce adoption because users' skill and knowledge towards technology can result in seeking, trying or accepting new innovation (Ghobakhloo and Tang, 2013). Obviously, a manager who is good at technology, tends to seek solutions by changing business or supports innovation is usually considered as an innovative manager (Thong and Yap, 1995). Moreover, the research of Thi and Eam (2011) is also in line with the abovementioned result that top management has significantly support e-business. However, if manager prefers to adopt innovation, they have to face up with a number of obstacles or risks. As a technology innovation, e-commerce implementation is extremely risky, especially in the case of small business in developing countries (Ghobakhloo and Tang, 2013). Therefore, managers should be well educated on the functions, implementations and benefits of E-commerce applications for their business. The hypothesis is presented as below:

*H7: Management support positively influence the adoption of E-commerce by Vietnamese SMEs*

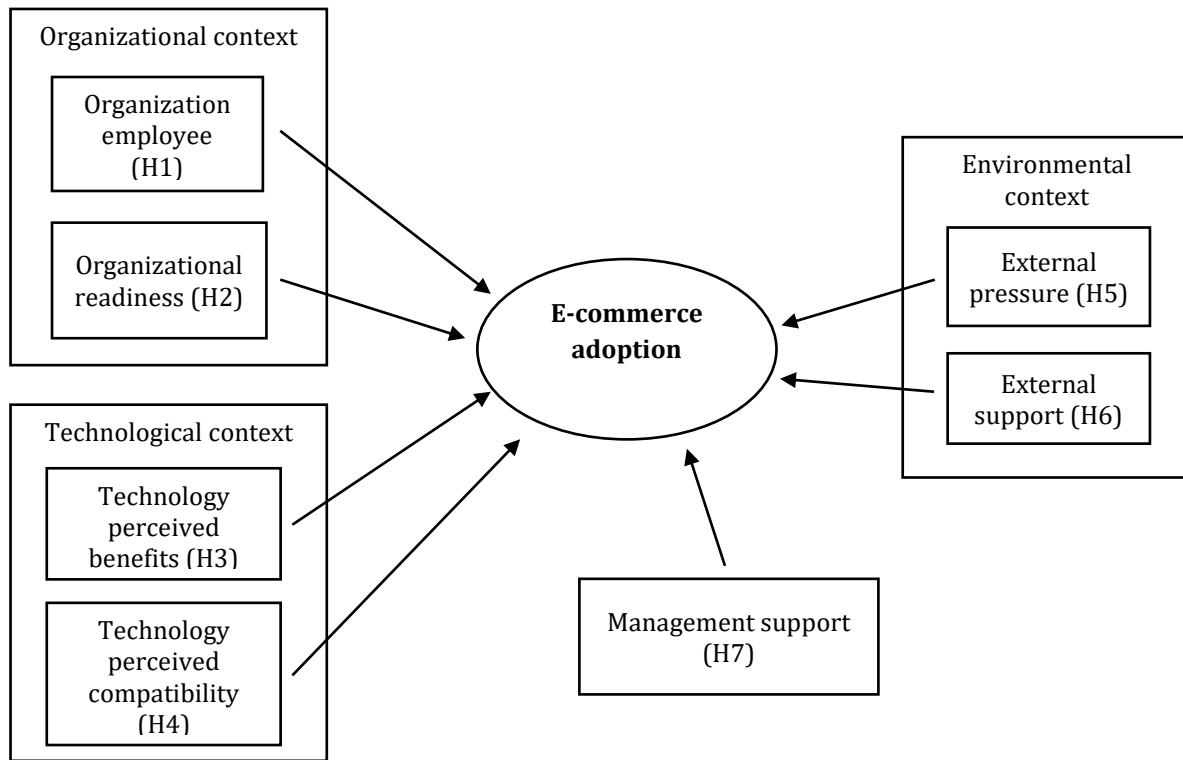


Figure 2. Theoretical framework

Source: Authors' own research.

## Methodology

### *Sampling method*

With a view to finding out the real situation of E-commerce adoption in Vietnamese small and medium-sized enterprises during the COVID-19 pandemic, a questionnaire is proposed in order to collect opinions of small and medium-sized enterprises in Vietnam on e-commerce adoption during and after the COVID-19 pandemic. To be specific, target respondents for this study are owners/managers, leaders of staff in Vietnamese SMEs (the company has less than 100 employees). This purposive sampling criterion is set to eliminate firms having not enough experiences in adapting e-commerce. Therefore, a data collection process is carried out by launching both online and offline survey from November 2020 to December 2020, in which Vietnamese social media sites (such as Facebook, Gmail, Google Drive, etc.) are remarkably important to approach target respondents. The sample is selected based on convenient samplings and taken into account the balance of age, gender, education level and company field in order to maximize the number of participants for this topic.

### *Sample size*

In a quantitative analysis, sample size depends on the number of variables. According to Hair et al. (2013), the number of observations is required to be at least 5 times higher than

the number of question items. In this study, the number of items is 32, so that the minimum required sample size should be 160 observations. In order to ensure the reliability of research result, 250 surveys are distributed but only 229 surveys are qualified. This number of respondents meets sample size requirement; therefore, it can be used for a quantitative analysis (Hair et al., 2013).

### ***Measurement and methodology***

The theoretical framework is adapted from the extended TOE framework and then a questionnaire is built upon this framework. Particularly, these indicators are also used by Rowe et al. (2012) and Mohtaramzadeh et al. (2017). The final questionnaire includes 32 items divided into two parts. The first part of the questionnaire includes all factors having impact on e-commerce adoption by SMEs, while the second part is about customers' demographic details. In order to avoid questionnaire fatigue and comprehensive errors, all experience statements in part 1 are positively worded (Buttle, 1996). All of the measures in study employ a 5-point Likert scale. Valid data is analysed through the following steps: (i) Descriptive statistics, (ii) Reliability and validity test, (iii) Exploratory factor analysis, and (iv) Multiple regression analysis.

## **Research Results**

### ***Descriptive analysis***

The statistical results described in table 1 show:

- With regard to respondents, 59.8% of them are male and belong to the group of age 20-29 years, which is understandable because in Asia, the male is likely to be an organizational manager, and the age of 20-29 tends to update new technology easily. Moreover, half of participants have Bachelor degrees. However, this survey also asks for opinions of not only managers, but also senior staff and team leaders because these persons have enough knowledge, skills as well as working time to understand the company situation.
- In terms of company, nearly half of the companies are retail/wholesale, followed by manufacturing firms and then other company types. Almost all of them are placed in mega cities such as Hanoi, Ho Chi Minh, Danang, etc.

*Table 2. Overall respondents' demographic details*

|                   | Frequency | Percent % |                     | Frequency | Percent % |
|-------------------|-----------|-----------|---------------------|-----------|-----------|
| <b>Gender</b>     |           |           | <b>Education</b>    |           |           |
| Female            | 82        | 35.8      | Bachelor            | 127       | 49.0      |
| Male              | 137       | 59.8      | Master              | 91        | 35.1      |
| Prefer not to say | 10        | 4.4       | Other               | 11        | 4.2       |
| <b>Age</b>        |           |           | <b>Service type</b> |           |           |
| 20 – 29           | 153       | 66.8      | Manufacturing       | 85        | 32.8      |
| 30 – 39           | 71        | 31        | Retail/Wholesale    | 120       | 46.3      |
| 40 - 49           | 5         | 2.2       | Other               | 24        | 9.2       |
| <b>Position</b>   |           |           | <b>Experience</b>   |           |           |
| Senior staff      | 43        | 18.8      | About 1 year        | 63        | 27.5      |
| Team leader       | 94        | 41.0      | About 2 to 3 years  | 82        | 35.8      |
| Manager           | 92        | 40.2      | Over 3 years        | 57        | 24.9      |
| <b>Area</b>       |           |           | Not yet             | 27        | 11.8      |

|              | Frequency | Percent % |  | Frequency | Percent % |
|--------------|-----------|-----------|--|-----------|-----------|
| Mega cities  | 222       | 97        |  |           |           |
| Other cities | 7         | 3         |  |           |           |

Source: Authors' own research.

### **Reliability test**

According to the results of the reliability test, it is recognized that the mean for most constructs of the framework is from 3 to 4, which shows the average compliance of SMEs with these statements. Especially, item EP2 (*Vietnamese customers require a better quality of transaction platform*), EP3 (*COVID-19 pandemic leads to the raise of e-commerce adoption in almost enterprises*) has a mean value of 4.28 and 4.02 respectively, and item TC5 (*TC5 – E-commerce adoption is compatible with customers' behaviour during Covid-19*) has a mean value of 4.07, which means that most Vietnamese SMEs adopt e-commerce due to COVID-19 pandemic (appendix 2).

Besides, all items have high Cronbach's alpha (over 0.7) and high coefficient of item-to-total correlation (0.5-0.8), which suggest the high correlation of these items and confirm the consistency of the measurement variables (appendix 2). With these results, these factors of e-commerce adoption are mostly reliable and suitable for the next analyses.

### **Exploratory factor analysis**

Table 3. KMO and Bartlett's test result

|                                               |                    |          |
|-----------------------------------------------|--------------------|----------|
| <b>Kaiser-Meyer-Olkin Measure of Sampling</b> |                    | .822     |
| <b>Bartlett's Test of Sphericity</b>          | Approx. Chi-square | 4904.733 |
|                                               | Df                 | 253      |
|                                               | Sig.               | 0.000    |

Source: Authors' own research.

In general, the KMO measure of 0.822 being higher than the minimum level of 0.5 is considered as marvellous statistics (table 2). Moreover, the significance of Bartlett's test of Sphericity is 0.000. As a result, the dataset is appropriate for the factor analysis.

In terms of exploratory factor analysis, the ideal factor loading is 0.4 because this test has 229 samples (Hair et al., 2013). After running the initial step of factor analysis with the use of varimax rotation, 25 items are summarized to eight underlying factors. However, item OE3 and OR5 had cross factor loading below 0.4, meaning that these variables are removed from the scale. When running the final factor analysis, 23 items remain in 8 underlying factors and all items are strongly loaded in particular factors, meeting the requirements of convergence and discriminant validity (Cohen et al., 1992).

Table 4. Rotated component matrix for final step

|     | <b>Component</b> |          |          |          |          |          |          |          |
|-----|------------------|----------|----------|----------|----------|----------|----------|----------|
|     | <b>1</b>         | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>8</b> |
| OE1 |                  |          |          |          |          | .718     |          |          |
| OE2 |                  |          |          |          |          | .816     |          |          |
| OR4 |                  |          |          |          |          |          | .408     |          |
| OR6 |                  |          |          |          |          |          | .559     |          |
| OR7 |                  |          |          |          |          |          | .885     |          |
| TB1 | .650             |          |          |          |          |          |          |          |

|     | Component |      |      |      |      |   |   |      |
|-----|-----------|------|------|------|------|---|---|------|
|     | 1         | 2    | 3    | 4    | 5    | 6 | 7 | 8    |
| TB2 | .648      |      |      |      |      |   |   |      |
| TB3 | .811      |      |      |      |      |   |   |      |
| TC4 |           |      | .688 |      |      |   |   |      |
| TC5 |           |      | .438 |      |      |   |   |      |
| TC6 |           |      | .719 |      |      |   |   |      |
| EP1 |           |      |      | .464 |      |   |   |      |
| EP2 |           |      |      | .814 |      |   |   |      |
| EP3 |           |      |      | .746 |      |   |   |      |
| ES4 |           |      |      |      | .908 |   |   |      |
| ES5 |           |      |      |      | .758 |   |   |      |
| ES6 |           |      |      |      | .692 |   |   |      |
| MS1 |           | .665 |      |      |      |   |   |      |
| MS2 |           | .615 |      |      |      |   |   |      |
| MS3 |           | .734 |      |      |      |   |   |      |
| EA1 |           |      |      |      |      |   |   | .807 |
| EA2 |           |      |      |      |      |   |   | .710 |
| EA3 |           |      |      |      |      |   |   | .747 |

Source: Authors' own research.

## Regression analysis

### Pearson correlations

Table 5. Pearson correlation among independent and dependent variables

|    |         | OE    | OR    | TB    | TC    | EP    | ES    | MS    | EA    |
|----|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| EA | Pearson | 0.515 | 0.551 | 0.598 | 0.680 | 0.488 | 0.438 | 0.667 | 1     |
|    | Sig     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Note: Correlations are all significant at the 0.01 level (2-tailed).

Source: Authors' own research.

The Pearson correlations results of this paper indicate that all variables are positively correlated to e-commerce adoption in Vietnamese small and medium-sized enterprises. Particularly, the value of all correlations is smaller than 0.8; thus, there is no multicollinearity among the independent variables (Gujarati, 2004).

### Regression model

Table 6. Regression model result

|                                         | Standardized Coefficients Beta | Sig.  | VIF   |
|-----------------------------------------|--------------------------------|-------|-------|
| Organization employee (OE)              | 0.101                          | 0.085 | 1.892 |
| Organizational readiness (OR)           | 0.030                          | 0.654 | 2.561 |
| Technology perceived benefit (TB)       | 0.016                          | 0.849 | 3.983 |
| Technology perceived compatibility (TC) | 0.443                          | 0.000 | 2.732 |
| External pressure (EP)                  | 0.245                          | 0.001 | 2.809 |
| External support (ES)                   | 0.187                          | 0.000 | 1.408 |
| Management support (MS)                 | 0.395                          | 0.000 | 2.756 |
| R                                       | 0.778                          |       |       |
| R Square                                | 0.605                          |       |       |
| Adjusted R square                       | 0.593                          |       |       |

|                    |       |
|--------------------|-------|
| Model Significance | 0.000 |
|--------------------|-------|

Source: Authors' own research.

Overall, the R value is 0.778, revealing a high degree of correlation. The value of adjusted R square is 0.605, hence, it can be concluded that e-commerce adoption in Vietnamese SMEs can be explained by 60.5% of technological, organizational, environmental context and management support. In addition, when the significant value is 0.000 (lower than 0.05), this model is meaningful enough in predicting the outcome variables.

With regard to independent factors, the coefficient of *technology perceived compatibility*, *external pressure*, *external support* and *management support* is significant at p-values lower than 0.05, at 0.000, 0.001, 0.000 and 0.000 respectively. Furthermore, values of the standardized coefficient of four of the above-mentioned factors are 0.443, 0.245, 0.187 and 0.395 respectively. In other words, the p-values of *organization employee*, *organizational readiness* and *technology perceived benefit* are all above 0.05, meaning that these factors have no significant impact on e-commerce adoption by Vietnamese SMEs.

As discussed above, it can be concluded that **Hypothesis 4**, **Hypothesis 5**, **Hypothesis 6** and **Hypothesis 7** are **supported**; while Hypothesis 1, Hypothesis 2 and Hypothesis 3 are rejected. Consequently, the findings confirm the literature according to which improvements in the four aspects (*technology perceived compatibility*, *external pressure*, *external support* and *management support*) can be positively beneficial to the implementation of e-commerce in Vietnamese SMEs during the COVID-19 pandemic. The ratio of each independent factor is shown in table 7.

Table 7. The order of influence level

| Factor                                  | Beta  | Influence percentage | Order of influence level |
|-----------------------------------------|-------|----------------------|--------------------------|
| Technology perceived compatibility (TC) | 0.443 | 34.9                 | 1                        |
| Management support (MS)                 | 0.395 | 31.1                 | 2                        |
| External pressure (EP)                  | 0.245 | 19.3                 | 3                        |
| External support (ES)                   | 0.187 | 14.7                 | 4                        |

Source: Authors' own research.

## Discussion, implications and conclusion

### Discussion

The aim of the current study is to develop and test a theoretical model that investigates the determinants of e-commerce adoption by SMEs in the context of Vietnam. This leads to the emergence of two major findings, which are directly related to four above-mentioned hypotheses concerning the reality of technology acceptance.

The first findings consider the determinants of e-commerce adoption. Specifically, it can be inferred that the dependent variable is significantly impacted by four factors, namely, in order: Technology perceived compatibility (TC); Management support (MS), External pressure (EP) and External support (ES). In particular, TC is considered to be the most important factor. Conceptually, TC relates to the level of readiness that an innovative technology should be implemented in an organization without violating existing organizational values, needs and past experiences of potential adopters (Kanchanatane et al., 2014). Consistent with prior researches, e-commerce adoption is under considerable impact of TC and the incompatibility between e-commerce and the business picture hinders

the company's intention to accept new technologies (Islam, 2016; Ozturk et al., 2016). Besides, management support from the organization plays an essential part in the technological innovation process. The role of management is proven to be indispensable in business, especially in the SMEs situation, the managerial decisions directly create better or worse performance. Managers may face obstacles in adopting the technology, but the further efficiency would be seriously considered. Lastly, EP and ES produced normal effects on the adopters. SMEs are experiencing a lack of authorised support. Nevertheless, on the other hand, the Government has not presented significant pressure onto SMEs and this creates opportunities for SMEs to develop.

The second finding of the research indicates that both external and internal factors have impacts on the e-commerce adoption by SMEs in Vietnam. However, the issues arising inside the companies influence more significantly. TC and MS possess above 35% of influence and become the most important factors for the adopters to consider. In the meanwhile, EP and ES (external factors) are also weak determinants, with fewer than 20% of influence. External factors play a noticeable role, encouraging or discouraging sources of actions within the companies. As a consequence, if there are compulsory priorities, internal factors should be more favourable. Furthermore, the two categories of factors would contribute to the establishment of a solid framework for technology acceptance model in SMEs. The adoption process should start from the inside of SMEs. Compatibility can be the first and foremost issue to be considered. When the TC is reasonable, MS follows. Internal expertise of SMEs can be considered as one of the main reasons in deciding whether to accept a new technology. However, the process may encounter hindrance, depending on the ability of the managers. If the managers can produce effective decisions, the business would be innovative. The final considerations of the process are EP and ES, which serve as encouraging and discouraging factors for technology acceptance in SMEs. Generally, e-commerce adoption can be affected by internal and external factors; however, internal factors should be more emphasized.

### ***Implications***

According to the major findings of the study, the four determinants contributing to the e-commerce adoption suggest several implications for managers and researchers.

For managers, e-commerce adoption is considered to be important in the context of a revolutionized business, especially for SMEs (Bakri and Katsioloudes, 2015). The Internet has emerged and changed the nature of economy; therefore, it is becoming compulsory for SMEs to implement technology acceptance with the purpose of remaining profitable and competitive in the market. SMEs in Vietnam are not exceptional. With the number of adopters increased overtime, e-commerce rivalry is getting highly fierce. Moreover, technology could result in cost reduction and contribute to the overall efficiency which creates competitive advantages (Ibrahim et al., 2019). Consequently, it is beneficial to establish a framework for e-commerce adoption in particular, and technology acceptance in general, in the context of Vietnam. The SMEs managers should be aware of the determinants, namely: Technology perceived compatibility (TC); Management support (MS), External pressure (EP) and External support (ES) and the emphasis should be on the internal factors. The priority should be placed on the TC and MS, according to the above-mentioned. Another issue relating to managers is that the management support factor, which represents the managerial skills, knowledge or understanding about e-commerce,

can influence the adoption process. Therefore, it would be recommended that managers update the technological information constantly to keep up with the changing pace of the economy and deliver what customers desire. Scholars have pointed out that there is an inline relation between managers' understanding about e-commerce and the successful performance of SMEs (Ghobakhloo and Tang, 2013; Mohtaramzadeh et al., 2017). Generally, SMEs managers may seriously consider the favourable strategy of e-commerce adoption, including: effectively investing in e-commerce, thoroughly train, stimulate staff or clients about the technologies and completely fulfil the process. More importantly, there must be total commitment on e-commerce adoption at organizational level, top down from chief executive to normal staff.

For researchers, there are several different implications to be considered. The study is carried out under the SMEs perspective and would produce biased questionnaire answers. This point of view may be limited to profit maximization and omit the other issues such as ethics, trends or market influencers. However, the research questions which have been answered by the findings can be used to recommend innovative measurements and encouragements for SMEs in Vietnam to boost the e-commerce adoption process. Future research might base on the single point of view (SMEs perspective) to conduct the study beyond the classical ones. Depending on the nature of businesses, there should be different approaches for e-commerce adoption process so that, the findings may vary. This requires a larger scope of research for establishing a systematic framework for technology acceptance by SMEs in Vietnam. Last but not least, the study is conducted immediately after the effects of COVID-19 pandemic in Vietnam, leading to the fact that SMEs may be more eager to implement online retailing. Therefore, future researches should eliminate this temporary phenomenon by researching in normal times, not affected by global threats as the deadly pandemic.

### ***Limitations***

Despite the authors' effort, the study still encounters several limitations. Firstly, the sample size needs to be larger. Due to the hindrance from COVID-19, the questionnaire was only delivered online, via Google drive, which reduced the number of participants (no direct interaction with participants). Social distancing and lockdowns also forced numerous businesses to collapse. This may directly or indirectly affect the overall findings. Besides, the scope of the research is restricted to megacities, namely Hanoi, Ho Chi Minh City, Da Nang, Can Tho (accounting for 97% of the participants). Therefore, the credibility may not be adequately solid because of the differences in e-commerce adoption among megacities and small cities. Another issue with the study may belong to the research model. There may be a better model with more determinants and it may produce contradicted results.

### ***Recommendation for further study***

The study "Towards an Economic Recovery after the COVID-19 Pandemic: Empirical Study on Electronic Commerce Adoption by Small and Medium-Sized Enterprises in Vietnam" has some limitations due to COVID-19 pandemic effects and the short time available. Therefore, as a recommendation for a further study, the research scope should be widened. In this study, the buying routine is paid special attention in several mega cities such as Hanoi, Ho Chi Minh City, Da Nang, Can Tho. Consequently, there has not been made a thorough comparison among those cities and other smaller cities in Vietnam. Moreover, the

COVID-19 has come back and forth so that SMEs in Vietnam need to have long-term commitment or changes for dealing with the reality. The authors conducted the research in the first year of emergence of the deadly pandemic and when the new wave of COVID-19 returned to Vietnam, the effects have changed dramatically. Therefore, it is urgent that further studies take into account these changes in order to provide superior methods for minimizing the loss in SMEs businesses. Last but not least, it would be reasonable if further studies can base on the current result, then analyse, assert and give valuable comments on the effectiveness of the coping methods implemented in 2020 and 2021 for COVID-19. As such, there would be higher-efficiency procedures to prevent the Corona viruses to deepen the economic crisis in the following years.

### Conclusions

It cannot be denied that the COVID-19 pandemic has created indispensable and negative consequences on the global economy. The handling process is being carried out in several countries; however, this would take longer time to finish. SMEs, with the worse financial strength, have been more badly affected by the pandemic so that the enterprises must not only count on economic support from Vietnam Government. It is suggested that the adoption of e-commerce would contribute as an effective method to an increase in sales revenue and would function correctly even in contexts of social distancing. As a result, SMEs in Vietnam must be encouraged to take actions in technology acceptance, raising the level of readiness to change from physical stores to online platforms.

Therefore, the study “Towards an Economic Recovery after the COVID-19 Pandemic: Empirical Study on Electronic Commerce Adoption by Small and Medium-Sized Enterprises in Vietnam” is carried out by analysing 229 Vietnamese SMEs to come up with major findings relating to the four important determinants of e-commerce adoption by SMEs in the context of Vietnam, namely: Technology perceived compatibility (TC); Management support (MS), External pressure (EP) and External support (ES). Thus, the resources of the SMEs should be allocated reasonably in both internal factors (compatibility and management) and external factors (pressure and support). In conclusion, the findings of the study are applicable in the SMEs environment of Vietnam in order to support and boost the recovery of these companies during the severe times of COVID-19 pandemic.

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## Appendices

### 1. Questionnaire

#### Part A: E-commerce adoption by small and medium-sized enterprises

The following statements ask your opinion about e-commerce adoption in your own company. Please choose the number that best matches how much you agree or disagree

with each statement (Values range from 1 to 5, representing Strongly Disagree to Strongly Agree).

### 1. Organizational context

|                                                                                                                        |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|------------------------------------------------------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| <b>Organization employee (H1)</b>                                                                                      |     |                   |          |         |       |                |
| 1.1 Employees are knowledgeable about e-commerce                                                                       | OE1 |                   |          |         |       |                |
| 1.2 Employees are competent about the new technology                                                                   | OE2 |                   |          |         |       |                |
| 1.3 Most of employees can use computer proficiently                                                                    | OE3 |                   |          |         |       |                |
| <b>Organizational readiness (H2)</b>                                                                                   |     |                   |          |         |       |                |
| 1.4 The organization has good financial resources to invest in e-commerce implementation                               | OR4 |                   |          |         |       |                |
| 1.5 The organization has good IT resources (computer, telephone, devices, etc.) to invest in e-commerce implementation | OR5 |                   |          |         |       |                |
| 1.6 The organization is aware of the role of e-commerce in improving business after COVID-19 pandemic                  | OR6 |                   |          |         |       |                |
| 1.7 The organization has oriented business strategy towards e-commerce after COVID-19 pandemic                         | OR7 |                   |          |         |       |                |

### 2. Technological context

|                                                                                      |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| <b>Technology perceived benefits (H3)</b>                                            |     |                   |          |         |       |                |
| 2.1 E-commerce adoption improves customer relations during the COVID-19 pandemic     | TB1 |                   |          |         |       |                |
| 2.2 E-commerce adoption broadens market or market share during the COVID-19 pandemic | TB2 |                   |          |         |       |                |
| 2.3 E-commerce adoption increases business revenue during the COVID-19 pandemic      | TB3 |                   |          |         |       |                |
|                                                                                      |     |                   |          |         |       |                |

|                                                                                                                     |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---------------------------------------------------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| <b>Technology perceived compatibility (H4)</b>                                                                      |     |                   |          |         |       |                |
| 2.4. E-commerce adoption is suitable with the current objectives of the company during the COVID-19 pandemic        | TC4 |                   |          |         |       |                |
| 2.5 E-commerce adoption is compatible with customers' behaviour during the COVID-19                                 | TC5 |                   |          |         |       |                |
| 2.6 E-commerce adoption is compatible with the experience of other companies in the same sector during the COVID-19 | TC6 |                   |          |         |       |                |

### 3. Environmental context

|                                                                                                                  |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|------------------------------------------------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| <b>External pressure (H5)</b>                                                                                    |     |                   |          |         |       |                |
| 3.1 There is a great competitiveness in the e-commerce sector during and after the COVID-19 pandemic             | EP1 |                   |          |         |       |                |
| 3.2 Vietnamese customers require a better quality of the transaction platform                                    | EP2 |                   |          |         |       |                |
| 3.3 The COVID-19 pandemic leads to an increase in e-commerce adoption in almost all enterprises                  | EP3 |                   |          |         |       |                |
| <b>External support (H6)</b>                                                                                     |     |                   |          |         |       |                |
| 3.4 The company receives a financial support from the Government during and after the COVID-19 pandemic          | ES4 |                   |          |         |       |                |
| 3.5 The company receives experiential support from the business community during and after the COVID-19 pandemic | ES5 |                   |          |         |       |                |
| 3.6 The company is located in an area with a high speed of e-commerce development                                | ES6 |                   |          |         |       |                |

### 4. Management support (H7)

|                                                                                                                |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|----------------------------------------------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| 4.1 Managers having a full awareness of technology result in accepting e-commerce during the COVID-19 pandemic | MS1 |                   |          |         |       |                |

|                                                                                                                       |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|-----------------------------------------------------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| 4.2 Managers having a positive attitude towards technology result in adopting e-commerce during the COVID-19 pandemic | MS2 |                   |          |         |       |                |
| 4.3 A capable manager results in accepting e-commerce during the COVID-19 pandemic                                    | MS3 |                   |          |         |       |                |

*5. How likely is the e-commerce adoption in your enterprises?*

|                                                                          |     | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------------------------------------------------------------|-----|-------------------|----------|---------|-------|----------------|
| 5.1 My enterprise is considering to adopt e-commerce during the COVID-19 | EA1 |                   |          |         |       |                |
| 5.2 My enterprise certainly adopts e-commerce during the COVID-19        | EA2 |                   |          |         |       |                |
| 5.3. My enterprise tends to adopt e-commerce in the future               | EA3 |                   |          |         |       |                |

*Part B: Demographic questions*

|                                                                                  |                                                                                                                                |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 6. What is your gender?<br>• Female<br>• Male<br>• Prefer not to say             | 10. In what business sector are you working?<br>• Manufacturing<br>• Retail/wholesale<br>• Other                               |
| 7. What is your age group?<br>• 20-29<br>• 30 -39<br>• 40-49<br>• Over 50        | 11. For how long has your business adopted e-commerce?<br>• About 1 year<br>• About 2-3 years<br>• Over 3 years                |
| 8. What is your current job position?<br>• Staff<br>• Team leader<br>• Manager   | 12. Where is your enterprise located?<br>• In a mega city (Hanoi, Ho Chi Minh, Da Nang, Hai Phong, Can Tho)<br>• In other city |
| 9. What is your education level?<br>• Bachelor<br>• Master<br>• Ph.D.<br>• Other |                                                                                                                                |

**2. Results of the reliability test**

|                                                        | Mean        | Cronbach's Alpha | Corrected Items - Total correlation |
|--------------------------------------------------------|-------------|------------------|-------------------------------------|
| <b>OE - Organization employee</b>                      | <b>3.80</b> | <b>0.824</b>     |                                     |
| OE1 - Employees are knowledgeable about e- commerce    | 3.76        | 0.708            | 0.727                               |
| OE2 - Employees are competent about the new technology | 3.75        | 0.735            | 0.707                               |
| OE3 - Most of employees can use computer proficiently  | 3.90        | 0.779            | 0.614                               |

|                                                                                                                          | Mean        | Cronbach's Alpha | Corrected Items - Total correlation |
|--------------------------------------------------------------------------------------------------------------------------|-------------|------------------|-------------------------------------|
| <b>OR - Organizational readiness</b>                                                                                     | <b>3.75</b> | <b>0.813</b>     |                                     |
| OR4 - The organization has good financial resources to invest in e-commerce implementation                               | 3.61        | 0.701            | 0.755                               |
| OR5 - The organization has good IT resources (computer, telephone, devices, etc.) to invest in e-commerce implementation | 3.74        | 0.797            | 0.568                               |
| OR6 - The organization is aware of the role of e-commerce in improving business after COVID-19 pandemic                  | 3.92        | 0.742            | 0.688                               |
| OR7 - The organization has oriented business strategy towards e-commerce after COVID-19 pandemic                         | 3.76        | 0.804            | 0.543                               |
| <b>TB - Technology perceived benefits</b>                                                                                | <b>3.78</b> | <b>0.892</b>     |                                     |
| TB1 - E-commerce adoption improves customer relations during the COVID-19 pandemic                                       | 3.82        | 0.870            | 0.760                               |
| TB2 - E-commerce adoption broadens market or market share during the COVID-19 pandemic                                   | 3.90        | 0.812            | 0.829                               |
| TB3 - E-commerce adoption increases business revenue during the COVID-19 pandemic                                        | 3.64        | 0.851            | 0.790                               |
| <b>TC - Technology perceived compatibility</b>                                                                           | <b>3.81</b> | <b>0.875</b>     |                                     |
| TC4 - E-commerce adoption is suitable with the current objectives of the company during the COVID-19 pandemic            | 3.78        | 0.764            | 0.82                                |
| TC5 - E-commerce adoption is compatible with customers' behaviour during the Covid-19                                    | 4.07        | 0.864            | 0.68                                |
| TC6 - E-commerce adoption is compatible with the experience of other companies in the same sector during the Covid-19    | 3.60        | 0.793            | 0.79                                |
| <b>EP - External pressure</b>                                                                                            | <b>4.05</b> | <b>0.828</b>     |                                     |
| EP1 - There is a great competitiveness in the e-commerce sector during and after the COVID-19 pandemic                   | 3.86        | 0.790            | 0.669                               |
| EP2 - Vietnamese customers require a better quality of the transaction platform                                          | 4.28        | 0.771            | 0.691                               |
| EP3 - The COVID-19 pandemic leads to an increase in e-commerce adoption in almost all enterprises                        | 4.02        | 0.726            | 0.721                               |
| <b>ES - External support</b>                                                                                             | <b>3.36</b> | <b>0.806</b>     |                                     |
| ES4 - The company receives a financial support from the Government during and after the COVID-19 pandemic                | 3.24        | 0.737            | 0.654                               |
| ES5 - The company receives experiential support from the business community during and after the COVID-19 pandemic       | 3.31        | 0.732            | 0.658                               |
| ES6 - The company is located in an area with a high speed of e-commerce development                                      | 3.56        | 0.734            | 0.671                               |
| <b>MS - Management support</b>                                                                                           | <b>3.85</b> | <b>0.880</b>     |                                     |
| MS1 - Managers having a full awareness of technology result in accepting e-commerce during the COVID-19 pandemic         | 3.83        | 0.831            | 0.768                               |
| MS2 - Managers having a positive attitude towards technology result in adopting e-commerce during the COVID-19 pandemic  | 3.92        | 0.843            | 0.756                               |
| MS3 - A capable manager results in accepting e-commerce during the COVID-19 pandemic                                     | 3.82        | 0.818            | 0.782                               |

|                                                                            | Mean        | Cronbach's Alpha | Corrected Items - Total correlation |
|----------------------------------------------------------------------------|-------------|------------------|-------------------------------------|
| <b>EA - E-commerce adoption</b>                                            | <b>3.62</b> | <b>0.753</b>     |                                     |
| EA1 - My enterprise is considering to adopt e-commerce during the COVID-19 | 3.61        | 0.704            | 0.530                               |
| EA2 - My enterprise certainly adopts e-commerce during the COVID-19        | 3.69        | 0.750            | 0.500                               |
| EA3 - My enterprise tends to adopt e-commerce in the future                | 3.58        | 0.705            | 0.552                               |