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# Understanding online purchasing behaviour after COVID-19: an extended technology acceptance model with motivations learnt from the pandemic

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## ABSTRACT

Although the COVID-19 pandemic has been overcome, the balance between offline and online buying has not returned to pre-pandemic ratios. Statistics even show that online shopping continues to grow. This study develops a theoretical model that explains the growing use of online purchasing by integrating the lingering effects of motivational factors learnt during the COVID-19 pandemic into the technology acceptance model. Three types of motivational factors (perceived risks, acquired skills, and experienced benefits) are defined based on a performed literature analysis. Using a rather unique approach their motivational impact during the pandemic and lingering effects after it conventionalised within the framework of the technology acceptance model, thus extending the latter with factors identified during the COVID-19 pandemic and offering new research avenues for researching online buying behaviours.

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COVID-19; technology acceptance model; learnt motivations; online buying; perceived risks; acquired skills; experienced benefits

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Marketing; Marketing Research; Retail Marketing

## Introduction

Consumers tend to repeat behaviours that have produced positive results in the past (Verplanken & Wood, 2006). Behaviour modifications happen when previous behaviours (a) stop producing satisfactory results or (b) become inefficient or impossible due to changes in the behavioural context (Eger et al., 2021). Typically, behavioural changes tend to be gradual and are rarely radical (Bessant et al., 2001). However, a fast transformation of behaviour can occur due to dramatic changes in the environment, motivating individuals to change their traditional way of behaving (Kannan & Kulkarni, 2022). The COVID-19 pandemic, which triggered the emergence of specific situational factors related to health threats and the implementation of strict social distancing measures, was one such drastic environmental change, creating motivations for radical changes in consumers' shopping behaviour (Vazquez-Martínez et al., 2021). The most visible effects included a significant decrease in offline buying and a massive increase in online buying (e.g. Kannan & Kulkarni, 2022; Pham et al., 2020), sometimes motivating people to concentrate almost solely on the online option for purchasing goods (Gordon-Wilson, 2022).

Although the COVID-19 pandemic has been overcome and most countries have cancelled or reduced social distancing restrictions to a minimum (e.g. Shafer et al., 2021), the balance between offline and online buying has not returned to pre-pandemic ratios (Alwan et al., 2023). Statistics even show that online shopping continues to grow. Global retail e-commerce sales reached an estimated 5.8 trillion U.S. dollars in 2023 and are projected to reach 39% growth over the coming years, surpassing eight trillion dollars by 2027 (Statista, 2024). This means that consumers have acquired specific motivations to shop online during the pandemic and that these motivations continue to exert lingering effects in the post-pandemic period. Therefore, the pandemic period provides valuable insight into changes in consumer behaviour, having encouraged certain populations to start shopping online and contributed to

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increases in online shopping volumes among those who had already shopped online before the pandemic (Hansson et al., 2022).

One traditional way to analyse online purchasing behaviour is grounded in the technology acceptance model (TAM) (Vahdat et al., 2021). However, the radical change from offline to online buying brought about by the pandemic is not limited to the adoption of online technology. Rather, the adoption of the technology was a consequence of other important factors/motivators of behavioural change.

This study aims to develop a theoretical model that explains the growing use of online purchasing by integrating the lingering effects of motivational factors learnt during the COVID-19 pandemic into the technology acceptance model.

We propose that motivations to move towards online buying have three sources. The first is avoiding risks, primarily linked with potential health threats. This strong risk-avoidance motivation had an impact on the second motivation, which was to develop skills in online purchasing. Third, the development of skills and acquisition of online experience helped to discover the benefits offered by online purchasing in general. All three groups of motivations may be instrumentalised with numerous factors that have acquired specific importance during the COVID-19 period, but some of them have persisted after the pandemic period, resulting in new levels of online buying. Analysing these factors in the context of the TAM contributes to the technology adoption and online purchasing literature by (a) unfolding the groups of motivational factors that contribute to the development of online buying and (b) linking these groups with the traditional TAM model.

## **Theoretical grounding of the online buying model after the COVID-19 pandemic**

### ***Motivational factors for using online buying learnt during the pandemic***

Some of the most obvious changes implemented during the COVID-19 pandemic in many countries were social contact restrictions (Jaspal et al., 2020; Radanielina Hita et al., 2023). These resulted from the internationally understood threats of infection spread and, more generally, from the serious health risks to the entire population (Pantano et al., 2020). Avoiding these risks may have been the first immediate reaction on a personal level, which modified many types of usual behaviours, including product buying.

Avoidance-type attitudes and behaviours are rarely interpreted as motivators or are typically considered as de-motivators for some activities (e.g. Soopramanien, 2011). However, we argue that the demotivating aspect of these factors is linked to an activity that is directly connected to the perceived risks; the same factors may positively impact attitudes towards this activity's less risky alternatives (e.g. Eger et al., 2021).

More specifically, it may be assumed that the potential risks to population health generated by COVID-19 created a twofold motivational effect: (a) motivation to avoid social contact and (b) a motivation to solve problems with little or no potential risks to one's health. Motivation (a) served as a negative motivation (demotivation) to visit offline stores, where the risk of infection was relatively high (Truong & Truong, 2022). At the same time, this generated a positive motivation to use a relatively less risky alternative for purchasing products: online buying. Therefore, all factors that represent personal concerns about health and attitudes toward risks during that period served as motivational factors for online purchasing (Hai & Khoa, 2021; Nguyen et al., 2021). Table 1 lists the key motivational factors in a more detailed way.

All the above-mentioned factors are rooted in the dangers to individuals' health, almost neglecting all other types of risks (Urbonavicius & Adomaviciute-Sakalauske, 2023; Jaspal et al., 2020). This is the uniqueness of pandemic periods, when one type of risk strongly dominates others; in other periods, these factors (risk avoidance, uncertainty avoidance) may refer to risks of several types (e.g. Huber et al., 2014).

Another specificity of this group of factors during the pandemic was their impact on skills that enable a less risky alternative for buying: online purchasing. The online purchasing alternative was easily accessible to people who had substantial skills in using the internet and particularly those who already had experience in browsing and buying online (Pappas et al., 2014). The switch from offline to online was easier and more appropriate for this part of the population than for others whose skills/experience in

**Table 1.** Motivating factors based on avoiding risks.

Factor	Motivational aspect	Source
Health concern	Generally, emphasises attention to one's health. Triggers the performance of necessary activities in the least health-risky way.	Hai and Khoa (2021)
Health consciousness	Puts a strong cognitive emphasis on general health concerns in a health self-monitoring approach. Triggers motivation to avoid situations when one's health might be threatened.	Candra et al. (2021)
Safety concern	Concentrates on the probability of occurrence of external factors that might reduce one's health safety.	Hansson et al. (2022); Michaelidou and Hassan (2008)
Risk avoidance/aversion	Reduced willingness to engage in 'risky' activities that are perceived to have a negative outcome, which motivates the search for less risky behavioural alternatives.	Im et al. (2021); Lorian and Grisham (2011)
Uncertainty avoidance	The extent to which a person feels threatened by ambiguous or unknown situations, which motivates the search for less risky behavioural alternatives.	Messner and Payson (2022)

Source: prepared by the authors based on the sources indicated in the table.

**Table 2.** Motivating factors learnt from acquired skills.

Factor	Motivational aspect	Source
Innovativeness	General propensity to be interested in novelties, including new online activities.	Chauhan et al. (2021)
Digital skills	Ability to use and navigate digital technologies effectively, which helps to perform online buying.	Angelovska Stankov (2023)
Internet familiarity	Belief in one's abilities to use the Internet in ways one finds helpful.	Chauhan et al. (2021)
Technology awareness	Individual attitudes and views about the new technology's applicability and alignment.	Al Halbusi et al. (2022)
Internet maven	Experience-based expertise in internet use, which helps to perform online buying.	Díaz-Martín et al. (2020); Abbas et al. (2023)

Source: prepared by the authors based on the sources indicated in the table.

this regard were weaker (Clemes et al., 2014). However, the successful move towards online shopping had a strong demonstrational effect on all others, emphasising the importance of Internet technology-related skills (Lindh et al., 2020). The general population understood the importance and usefulness of these skills in avoiding risks and increasing the use of online purchasing. Thus, internet-related skills, mavenism and abilities in using online technologies served as strong motivational factors during the COVID-19 period (Table 2).

Although measures restricting social contact varied across countries and periods (e.g. Bracale & Vaccaro, 2020), they often included the regulation of retailing, especially its offline form (e.g. Akhtar et al., 2020). Numerous inconveniences in using offline stores occurred because of regulations of flows of buyers and requirements to wear masks and follow disinfection rules, among others (Dannenberg et al., 2020). Social contact was much easier to avoid in online retailing given that it could be limited to the moment of delivery or avoided altogether if parcel lockers were used (e.g. Jiang and Stylos; 2021; Pani et al. (2020). Therefore, some benefits of online shopping/motivational factors to use it again developed from health-related concerns and the willingness to avoid risks of infection. However, the gradual accumulation of experience in e-shopping revealed many other advantages of online retailing, including the convenience of browsing and shopping, easy payment, and the privacy of the purchasing process (e.g. Gruntkowski & Martinez, 2022; Shaw et al., 2022). Additionally, many relative disadvantages of online buying were reduced or removed thanks to the efforts of online stores, which seized the opportunity to drastically develop their operations. Among these were the development of flexible systems of payment, different product return options, increased speed of delivery, improved serviceability and communication technologies easing the interactions between the retailer and buyer (e.g. Jiang and Stylos; 2021; Pham et al., 2020; Gruntkowski & Martinez, 2022; De' et al., 2020). The main motivating factors learnt from these benefits are listed in Table 3.

### **Using the TAM to predict online buying during the COVID-19**

Introduced by Davis (1986), the TAM has become one of the most used theoretical approaches to explain the process of technology adoption at the individual level (Widyanto et al., 2022). The TAM proposes that

**Table 3.** Motivating factors learnt from discovered benefits.

Factor	Motivational aspect	Source
Contactless work procedures of delivery couriers	The use of procedures that avoid close personal contact motivated to use of these types of delivery.	Jiang and Stylos (2021); Meena and Kumar (2022)
Autonomous devices (parcel lockers)	Social contact was further reduced by the possibility of picking up deliveries at the most convenient time, which increased motivation to use e-buying.	Jiang and Stylos (2021); Pani et al. (2020)
Fast delivery of products	Increased speed of delivery additionally motivated the use of e-buying.	Aryani et al. (2021)
Easy returns	The obstacle that was long perceived as a disadvantage of online buying was reduced with the help of procedures using either courier or parcel lockers.	Pham et al. (2020)
Improved and flexible payment methods	The rapid development of online payment forms and systems made the use of online buying more convenient.	Grunkowski and Martinez (2022)
Simple and quick communication between seller and buyer	E-stores developed systems that made communications more fluent and increased buyers' awareness of the delivery process and overall certainty about the process of buying.	De' et al. (2020)

Source: prepared by the authors based on the sources indicated in the table.

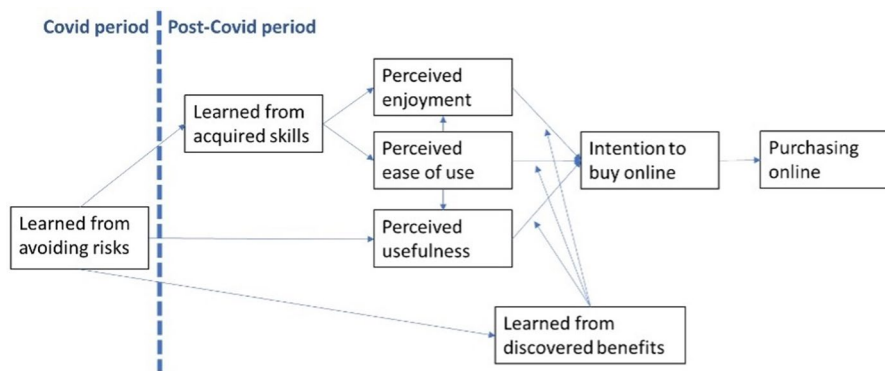
an individual's actual usage of an information system is predicted by their behavioural intention, which is shaped by perceived usefulness and perceived ease of use (Davis & Venkatesh, 1996). Perceived usefulness refers to the degree to which the individual believes the technology would enhance their task accomplishment, whereas perceived ease of use describes how effortless the individual believes the technology would be to use (Davis, 1989). Perceived usefulness and perceived ease of use are theorised to be shaped by external variables (Davis et al., 1989), and perceived ease of use is an antecedent of perceived usefulness (Davis, 1989). Although less frequently, some studies use an extended TAM incorporating an additional factor, namely, perceived enjoyment (Davis et al., 1992), or other modifications of this model (e.g. Alalwan et al., 2018; Tho To & Minh Trinh, 2021). Venkatesh et al. (2012) consider perceived enjoyment 'the fun, pleasure, entertainment, or playfulness derived from using a technology' (p. 161), and past research has revealed that perceived enjoyment plays an important role in user technology acceptance and demonstrated the correlation between perceived enjoyment and perceived ease of use (Venkatesh et al., 2002, Venkatesh et al., 2012; Yi & Hwang, 2003).

Online purchasing is one technology-related behaviour that is frequently investigated using the TAM (Vahdat et al., 2021). The TAM has been used to explore broad online purchasing-related topics, such as online purchasing with mobile devices (Vahdat et al., 2021), as well as more specific and narrower topics, such as online purchasing of telemedicine services (Kamal et al., 2020), mobility services (Min et al., 2019), online streaming (Camilleri & Falzon, 2021), and groceries (Ha & Stoel, 2009). The use of the TAM has taken on new significance during the COVID-19 pandemic because the multiple restrictions on traditional offline buying forced consumers to migrate online (Seetharaman, 2020). Thus, multiple researchers studied the adoption of online purchasing during the pandemic using the TAM (e.g. Nguyen et al., 2021; Smaldone et al., 2021); however, the studies included only fragmented factors related to the pandemic, they differed depending on the country where they were conducted, and the motivational nature of these factors was not analysed. Furthermore, these studies did not aim to investigate whether the changed consumer behavior remain after the end of the pandemic, leaving the question about their lingering effects unanswered. The current study fills this research gap, by summarizing pandemic-period studies and developing a model of behavioral change based on the pandemic-period as well as demonstrating that these effects remain important after the pandemic, more specifically after drastic health-linked impacts on consumer behaviour are ended.

### **Modelling online buying behaviour during and after the COVID-19 pandemic**

While TAM has traditionally been applied to explain technology adoption, including online purchasing behaviour, integrating it with the motivational factors associated with the COVID-19 pandemic extends the model in response to the specific external effects of this event.

Pandemic-specific motivating factors to buy online can be grouped into three categories: (a) factors rooted in avoidance of health-related risks, (b) factors based on acquired internet skills and (c) factors



**Figure 1.** Model of the impact of the COVID-19 pandemic on online buying.

grounded in the discovered benefits of online buying. The first group represents a direct response to the health threats and social distancing requirements of the pandemic period. Although they varied based on individual levels of health concerns and propensity to avoid risks, these factors played a major role in the motivation to look for safer purchasing alternatives to offline buying. These motivations positively impacted the perceived usefulness of a less risky purchasing alternative, which was online buying. Because online buying requires technological (IT-related) skills, risk-avoidance motivators during the pandemic strongly encouraged people to develop them to make purchases online. At the same time, the necessity to avoid risks during the COVID-19 period forced people to immediately use online buying, thus helping them discover the benefits of this form of purchasing, which was developing rapidly during the pandemic, and instantly reduced reasons to hesitate about its advantages (Pham et al., 2020). Thus, the motivational factors of avoiding risks during the pandemic influenced two other groups of motivational factors for online buying (Figure 1).

The specific interactions of the three groups of motivational factors observed during the pandemic help explain the general mechanism of their interrelationship. Although they are mainly important during a pandemic, when the major risks to population health predetermine many types of human behaviours, further analysis helps predict their impact on the use of online buying after the pandemic is over.

The importance of avoiding (mainly health-related) risks as a motivator to buy online after the pandemic is much lower but cannot be neglected among highly health-concerned segments of buyers. Therefore, we propose that the impact of these motivational factors continue to be important after the pandemic, particularly impacting the perceived usefulness of online buying:

P1: Motivational factors learnt from avoiding risks continue to positively impact the perceived usefulness of online buying after the pandemic.

The motivations to develop internet-linked skills during the pandemic were strongly affected by the risks present in offline buying. However, newly acquired skills serve as strong motivators to continue buying online after the pandemic because they make the process of buying easy and enjoyable. This helps to develop two propositions:

P2: Motivational factors learnt from acquired skills positively impact the perceived ease of use of online buying after the pandemic.

P3: Motivational factors learnt from acquired skills positively impact the perceived enjoyment of online buying after the pandemic.

Online buying was triggered by risk avoidance and somewhat 'imposed' on large populations during the pandemic. Nonetheless, the use of online buying during the COVID-19 period helped people find out about the safety of this form of purchasing and gradually discover many more benefits. These discoveries support further intentions to buy online by emphasising benefits that are linked with either the usefulness, ease of use, or enjoyment of online buying. Therefore, we propose that the discovered benefits of online buying serve as moderating factors in further intentions to use online buying:



P4: Motivational factors learnt from the discovered benefits of online buying positively moderate the impact of perceived usefulness, perceived ease of use, and perceived enjoyment on the intention to use online buying after the pandemic.

## Discussion, implications, and limitations

### *Discussion and theoretical implications*

This paper applies an approach to theoretical implication development that is not frequently used: it takes a context that serves as a triggering point for the development of certain effects and aims to predict the effects of the factors within this context after the initial context is changed (Urbonavicius & Adomaviciute-Sakalauske, 2023). Although this methodological approach is fairly well known, scholars rarely assess the lingering effects of the past because empirical support for such findings is difficult to obtain (e.g. Albarracín & Wyer, 2000; Belleau et al., 2007). Nonetheless, interpretations of the lingering effects of the past on the present are found not only in marketing studies but more frequently in discussions or theoretical propositions (Bowman et al., 2024; Caron et al., 2024; Urbonavicius et al., 2017). The current paper also proposes a theoretical linkage between the motivational factors that occurred during the pandemic and their continuation after it.

A similar grouping of factors has been observed in a few earlier studies (Urbonavicius & Adomaviciute-Sakalauske, 2023; Adomaviciute-Sakalauske et al., 2023); however, these have not been sufficiently detailed and have mainly focused on health or related risks or different social distancing measures. The present article adds to the knowledge in the field by grouping the factors based on their origin and treats them as motivational factors that impact the intention to use and actual use of the online buying option. Thus, it differs from studies that tested the impact of similar factors without considering their motivational nature (e.g. Hansson et al., 2022; Shaw et al., 2022).

The key propositions are developed and linked with the well-known TAM model, extending the model by including the lingering effects of the pandemic. Although there are numerous extensions of this widely used model (e.g. Alalwan et al., 2018; Bailey et al., 2017), the motivational aspect of the outlined factors and the suggested mechanism of their impact represents a substantial scientific novelty. The study contributes to the literature on technology acceptance by connecting it to behavioural motivations for a particular activity (online buying).

### *Managerial implications*

This study is purely conceptual, therefore theoretical findings and implications are the main outcomes achieved. However, some findings help developing managerial propositions for a number of various situations in e-commerce. First, although the COVID-19 pandemic with a radical change in the environment and therefore significant influence on people's behaviours is over, potential threats to public health still exist. People continue to face annual flu or other viruses' outbreaks, which as a result urge them to give priority to online purchasing because of its limited need for contacts with others. Therefore, companies operating online are advised to continue emphasizing the safe nature of online purchasing and encourage individuals applying behavioural mechanisms learned during the pandemic, i.e. using the IT skills and habits they developed. This is especially vital for people that are vulnerable in terms of health.

Second, this study proposes that acquired skills positively impact perceived ease of use of online purchasing, and the latter perceived usefulness and enjoyment according to the extended TAM. Considering high competition among online stores, this encourages companies operating online to further invest in the technological adoptions needed to simplify the purchasing process for the consumers (i.e. website navigation, product selection, payment procedures) as this can further increase perceived usefulness and even perceived enjoyment of the online purchasing process and lead to positive intentions.

Finally, e-businesses are also encouraged to monitor the IT skills of their consumers because they determine their shopping process and its complexity and, in some cases, these skills (e.g. market mavens) can even be employed to attract new consumers.

### **Limitations and further research**

The present study is based on an extensive literature review and employs a context-based approach to developing propositions regarding the effects that remain after the analysed context changes. This helps to outline theoretical propositions, but further testing is required to obtain empirical support. There is an obvious need to empirically test the whole model, operationalising the three groups of motivational factors with those that are the most important to the current situation and population under analysis. More specifically, it would be advisable to perform further empirical research that would use the suggested model, but extend it towards several rather promising directions:

- whether health risk-related factors still contribute to the perceived usefulness of online buying among populations that are expected to exhibit different levels of health consciousness.
- whether obtained IT-related skills directly positively impact perceived ease of use and perceived enjoyment in routine online purchasing.

In addition, future studies may seek to expand and test the proposed model with other specific emerging factors that are important for different demographic groups and geographical regions which would significantly enhance the explanatory nature of the model.

In general, empirically testing the proposed extended TAM offers broad opportunities for further research in various environments.

### **Authors' contributions**

The authors confirm their contribution to the paper as follows: study conception and design: K.A.S. and S.U.; collection of literature sources: K.A.S.; analysis and interpretation of results: K.A.S. and S.U.; draft manuscript preparation: K.A.S. and S.U. All authors reviewed the results and approved the final version of the manuscript.

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No potential conflict of interest was reported by the author(s).

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## Data availability statement

Data sharing is not applicable – no new data is generated.

## References

- Abbas, A. F., Khwaja, M. G., Abbasi, A. Z., & Hameed, A. (2023). Market mavenism, tourists' co-creation experience, loyalty, vacation intention: Mediating role of travel incentives in the post-COVID-19 environment. *Consumer Behavior in Tourism and Hospitality*, 18(4), 532–550. <https://doi.org/10.1108/CBTH-01-2023-0007>
- Adomaviciute-Sakalauske, K., Urbonavicius, S., Kirse, S., & Zimaitis, I. (2023). Applications of TPB and TAM theoretical backgrounds for online purchasing research during COVID – 19 pandemic. In D. Vrontis, Y. Weber, & E. Tsoukatos (Eds.), *Business transformation in uncertain global environments* (pp. 38–49). EuroMed Press.
- Akhtar, N., Akhtar, M. N., Usman, M., Ali, M., & Siddiqi, U. I. (2020). COVID-19 restrictions and consumers' psychological reactance toward offline shopping freedom restoration. *The Service Industries Journal*, 40(13–14), 891–913. <https://doi.org/10.1080/02642069.2020.1790535>
- Al Halbusi, H., Al-Sulaiti, K., Abbas, J., & Al-Sulaiti, I. (2022). Assessing factors influencing technology adoption for online purchasing amid COVID-19 in Qatar: Moderating role of word of mouth. *Frontiers in Environmental Science*, 10, 1–17. <https://doi.org/10.3389/fenvs.2022.942527>
- Alalwan, A. A., Baabdullah, A. M., Rana, N. P., Tamilmani, K., & Dwivedi, Y. K. (2018). Examining adoption of mobile internet in Saudi Arabia: Extending TAM with perceived enjoyment, innovativeness and trust. *Technology in Society*, 55, 100–110. <https://doi.org/10.1016/j.techsoc.2018.06.007>
- Albarracín, D., & Wyer, R. S. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social Psychology*, 79(1), 5–22. <https://doi.org/10.1037/0022-3514.79.1.5>
- Alwan, S. Y., Hu, Y., Al Asbahi, A. A. M. H., Al Harazi, Y. K., & Al Harazi, A. K. (2023). Sustainable and resilient e-commerce under COVID-19 pandemic: A hybrid grey decision-making approach. *Environmental Science and Pollution Research International*, 30(16), 47328–47348. <https://doi.org/10.1007/s11356-023-25456-0>
- Angelovska Stankov, N. (2023). Exploring the relationship between digital skills, online buying, and encountered problems across Europe. *UTMS Journal of Economics*, 14(2), 188–198.
- Aryani, D. N., Kumar Nair, R., Xing Yue Hoo, D., Kee Mui Hung, D., Hong Ru Lim, D., Ravi Chandran, D., Ping Chew, W., & Desai, A. (2021). A study on consumer behaviour: Transition from traditional shopping to online shopping during the COVID-19 pandemic. *International Journal of Applied Business and International Management*, 6(2), 81–95. <https://doi.org/10.32535/ijabim.v6i2.1170>
- Bailey, A. A., Pentina, I., Mishra, A. S., & Ben Mimoun, M. S. (2017). Mobile payments adoption by US consumers: An extended TAM. *International Journal of Retail & Distribution Management*, 45(6), 626–640. <https://doi.org/10.1108/IJRDM-08-2016-0144>
- Belleau B. D., Summers T.A., Xu Y. and Pinel R. (2007). Theory of reasoned action: Purchase intention of young consumers. *Clothing and Textile Research Journal*, 25(3), 244–257. <https://doi.org/10.1177/0887302X07302768>
- Bessant, J., Caffyn, S., & Gallagher, M. (2001). An evolutionary model of continuous improvement behavior. *Technovation*, 21(2), 67–77. [https://doi.org/10.1016/S0166-4972\(00\)00023-7](https://doi.org/10.1016/S0166-4972(00)00023-7)
- Bowman, M. A., Seehusen, D. A., & Ledford, C. J. (2024). Lingered impact of COVID-19, preventive care considerations, and US health system challenges. *Journal of the American Board of Family Medicine: JABFM*, 36(6), 879–882. <https://doi.org/10.3122/jabfm.2023.230345R0>
- Bracale, R., & Vaccaro, C. M. (2020). Changes in food choice following restrictive measures due to Covid-19. *Nutrition, Metabolism, and Cardiovascular Diseases: NMCD*, 30(9), 1423–1426. <https://doi.org/10.1016/j.numecd.2020.05.027>
- Camilleri, M. A., & Falzon, L. (2021). Understanding motivations to use online streaming services: Integrating the technology acceptance model (TAM) and the uses and gratifications theory (UGT). *Spanish Journal of Marketing - ESIC*, 25(2), 217–238. <https://doi.org/10.1108/SJME-04-2020-0074>
- Candra, S., Ayudina, M., & Arashi, M. A. (2021). The impact of online food applications during the Covid-19 pandemic. *International Journal of Technology*, 12(3), 472–484. <https://doi.org/10.14716/ijtech.v12i3.4195>
- Caron, E. E., Drody, A. C., Carriere, J. S., & Smilek, D. (2024). The impact of a global pandemic on undergraduate learning experiences: Lifting the restrictions. *European Journal of Psychology of Education*, 39(3), 2435–2459. <https://doi.org/10.1007/s10212-023-00790-6>
- Chauhan, H., Pandey, A., Mishra, S., & Rai, S. K. (2021). Modeling the predictors of consumers' online purchase intention of green products: The role of personal innovativeness and environmental drive. *Environment, Development and Sustainability*, 23(11), 16769–16785. <https://doi.org/10.1007/s10668-021-01337-9>
- Clemes, M. D., Gan, C., & Zhang, J. (2014). An empirical analysis of online shopping adoption in Beijing, China. *Journal of Retailing and Consumer Services*, 21(3), 364–375. <https://doi.org/10.1016/j.jretconser.2013.08.003>
- Dannenberg, P., Fuchs, M., Riedler, T., & Wiedemann, C. (2020). Digital transition by COVID-19 pandemic? The German food online retail. *Tijdschrift voor economische en sociale geografie = Journal of economic and social geography = Revue de géographie économique et humaine = Zeitschrift für ökonomische und soziale Geographie = Revista de geografía económica y social*, 111(3), 543–560. <https://doi.org/10.1111/tesg.12453>

- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. <https://doi.org/10.1287/mnsc.35.8.982>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14), 1111–1132. <https://doi.org/10.1111/j.1559-1816.1992.tb00945.x>
- Davis, F. D., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: Three experiments. *International Journal of Human-Computer Studies*, 45(1), 19–45. <https://doi.org/10.1006/ijhc.1996.0040>
- Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results* [Ph.D. thesis]. Sloan School of Management, Massachusetts Institute of Technology.
- De, R., Pandey, N., & Pal, A. (2020). Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management*, 55, 102171. <https://doi.org/10.1016/j.ijinfomgt.2020.102171>
- Díaz-Martín, A. M., Schmitz, A., & Yagüe Guillén, M. J. (2020). Are health e-Mavens the new patient influencers? *Frontiers in Psychology*, 11(779), 779. <https://doi.org/10.3389/fpsyg.2020.00779>
- Eger, L., Kom, L., Egerova, D., & Micik, M. (2021). The effect of COVID-19 on consumer shopping behaviour: Generational cohort perspective. *Journal of Retailing and Consumer Studies*, 61, 1–11.
- Gordon-Wilson, S. (2022). Consumption practices during the COVID-19 crisis. *International Journal of Consumer Studies*, 46, 575–588.
- Gruntkowski, L. M., & Martinez, L. F. (2022). Online grocery shopping in Germany: Assessing the impact of COVID-19. *Journal of Theoretical and Applied Electronic Commerce Research*, 17(3), 984–1002. <https://doi.org/10.3390/jtaer17030050>
- Ha, S., & Stoel, L. (2009). Consumer e-shopping acceptance: Antecedents in a technology acceptance model. *Journal of Business Research*, 62(5), 565–571. <https://doi.org/10.1016/j.jbusres.2008.06.016>
- Hai, P. H., & Khoa, B. T. (2021). *Organic foods online shopping intention: The moderator role of Social Distancing policy* [Paper presentation]. Proceedings of the 2021 International Conference on Data Analytics for Business and Industry (ICDABI), Sakheer, Bahrain (pp. 609–614). <https://doi.org/10.1109/ICDABI53623.2021.9655779>
- Hansson, L., Holmberg, U., & Post, A. (2022). Reorganizing grocery shopping practices – the case of elderly consumers. *The International Review of Retail, Distribution and Consumer Research*, 32(4), 351–369. <https://doi.org/10.1080/09593969.2022.2085137>
- Hita, M. L. R., Grégoire, Y., Lussier, B., Boissonneault, S., Vandenberghe, C., & Sénécal, S. (2023). An extended health belief model for COVID-19: Understanding the media-based processes leading to social distancing and panic buying. *Journal of the Academy of Marketing Science*, 51(1), 132–152. <https://doi.org/10.1007/s11747-022-00865-8>
- Huber, O., Huber, O. W., & Bär, A. S. (2014). Framing of decisions: Effect on active and passive risk avoidance. *Journal of Behavioral Decision Making*, 27(5), 444–453. <https://doi.org/10.1002/bdm.1821>
- Im, J., Kim, J., & Choeh, J. Y. (2021). COVID-19, social distancing, and risk-averse actions of hospitality and tourism consumers: A case of South Korea. *Journal of Destination Marketing & Management*, 20, 100566. <https://doi.org/10.1016/j.jdmm.2021.100566>
- Jaspal, R., Lopes, B., & Lopes, P. (2020). Predicting social distancing and compulsive buying behaviors in response to COVID-19 in a United Kingdom sample. *Cogent Psychology*, 7(1), 1800924. <https://doi.org/10.1080/23311908.2020.1800924>
- Jiang, Y., & Stylos, N. (2021). Triggers of consumers' enhanced digital engagement and the role of digital technologies in transforming the retail ecosystem during the COVID-19 pandemic. *Technological Forecasting and Social Change*, 172, 121029. <https://doi.org/10.1016/j.techfore.2021.121029>
- Kamal, S. A., Shafiq, M., & Kakria, P. (2020). Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). *Technology in Society*, 60, 101212. <https://doi.org/10.1016/j.techsoc.2019.101212>
- Kannan, P. K., & Kulkarni, G. (2022). The impact of Covid-19 on customer journeys: Implications for interactive marketing. *Journal of Research in Interactive Marketing*, 16(1), 22–36. <https://doi.org/10.1108/JRIM-03-2021-0078>
- Lindh, C., Nordman, E. R., Hånell, S. M., Safari, A., & Hadjikhani, A. (2020). Digitalization and international online sales: Antecedents of purchase intent. *Journal of International Consumer Marketing*, 32(4), 324–335. <https://doi.org/10.1080/08961530.2019.1707143>
- Lorian, C. N., & Grisham, J. R. (2011). Clinical implications of risk aversion: An online study of risk-avoidance and treatment utilization in pathological anxiety. *Journal of Anxiety Disorders*, 25(6), 840–848. <https://doi.org/10.1016/j.janxdis.2011.04.008>
- Meena, P., & Kumar, G. (2022). Online food delivery companies' performance and consumers expectations during Covid-19: An investigation using machine learning approach. *Journal of Retailing and Consumer Services*, 68, 103052. <https://doi.org/10.1016/j.jretconser.2022.103052>
- Messner, W., & Payson, S. E. (2022). Effects of national culture on the extent of panic buying during the COVID-19 outbreak. *Journal of International Consumer Marketing*, 34(3), 235–254. <https://doi.org/10.1080/08961530.2021.1962475>
- Michaelidou, N., & Hassan, L. M. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies*, 32(2), 163–170. <https://doi.org/10.1111/j.1470-6431.2007.00619.x>

- Min, S., So, K. K. F., & Jeong, M. (2019). Consumer adoption of the Uber mobile application: Insights from diffusion of innovation theory and technology acceptance model. *Journal of Travel & Tourism Marketing*, 36(7), 770–783. <https://doi.org/10.1080/10548408.2018.1507866>
- Nguyen, M. H., Armoogum, J., & Nguyen Thi, B. (2021). Factors affecting the growth of E-shopping over the COVID-19 era in Hanoi, Vietnam. *Sustainability*, 13(16), 9205. <https://doi.org/10.3390/su13169205>
- Nguyen, C., Tran, D., Nguyen, A., & Nguyen, N. (2021). The effects of perceived risks on food purchase intention: The case study of online shopping channels during COVID-19 pandemic in Vietnam. *Journal of Distribution Science*, 19(9), 19–27.
- Pani, A., Mishra, S., Golias, M., & Figliozzi, M. (2020). Evaluating public acceptance of autonomous delivery robots during the COVID-19 pandemic. *Transportation Research Part D: Transport and Environment*, 89, 102600. <https://doi.org/10.1016/j.trd.2020.102600>
- Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2020). Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. *Journal of Business Research*, 116, 209–213. <https://doi.org/10.1016/j.jbusres.2020.05.036>
- Pappas, I. O., Pateli, A. G., Giannakos, N. M., & Chrissikopoulos, V. (2014). Moderating effects of online shopping experience on customer satisfaction and repurchase intentions. *International Journal of Retail & Distribution Management*, 42(3), 187–204. <https://doi.org/10.1108/IJRDM-03-2012-0034>
- Pham, V. K., Thi, T. H. D., & Le, T. H. H. (2020). A study on the COVID-19 awareness affecting the consumer perceived benefits of online shopping in Vietnam. *Cogent Business & Management*, 7(1), 1846882. <https://doi.org/10.1080/23311975.2020.1846882>
- Seetharaman, P. (2020). Business models shifts: Impact of Covid-19. *International Journal of Information Management*, 54, 102173. <https://doi.org/10.1016/j.ijinfomgt.2020.102173>
- Shafer, L. A., Nesca, M., & Balshaw, R. (2021). Relaxation of social distancing restrictions: Model estimated impact on COVID-19 epidemic in Manitoba, Canada. *PLoS One*, 16(1), e0244537. <https://doi.org/10.1371/journal.pone.0244537>
- Shaw, N., Eschenbrenner, B., & Baier, D. (2022). Online shopping continuance after COVID-19: A comparison of Canada, Germany and the United States. *Journal of Retailing and Consumer Services*, 69, 103100. <https://doi.org/10.1016/j.jretconser.2022.103100>
- Smaldone, F., D'Arco, M., Marino, V., & Pellicano, M. (2021). Let thy food be thy medicine: Exploring the impact of Covid-19 pandemic on the online food delivery industry. In *Research and Innovation Forum 2021: Managing Continuity, Innovation, and Change in the Post-Covid World: Technology, Politics and Society* (pp. 383–392).
- Soopramanien, D. (2011). Conflicting attitudes and scepticism towards online shopping: The role of experience. *International Journal of Consumer Studies*, 35(3), 338–347. <https://doi.org/10.1111/j.1470-6431.2010.00945.x>
- Statista. (2024). *Retail e-commerce sales worldwide from 2014 to 2027*. Retrieved March 21, 2024, from <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>
- Tho To, AH., & Minh Trinh, T. (2021). Understanding behavioral intention to use mobile wallets in Vietnam: Extending the TAM model with trust and enjoyment. *Cogent Business & Management*, 8(1), 1891661. <https://doi.org/10.1080/23311975.2021.1891661>
- Truong, D., & Truong, M. D. (2022). How do customers change their purchasing behaviors during the COVID-19 pandemic? *Journal of Retailing and Consumer Services*, 67, 102963. <https://doi.org/10.1016/j.jretconser.2022.102963>
- Urbonavicius, S., & Adomaviciute-Sakalauske, K. (2023). Learning from pandemic periods: Elements of the theory of behavioral transformation. *Market-Tržište*, 35(2), 251–266. <https://doi.org/10.22598/mt/2023.35.2.251>
- Urbonavicius, S., Palaima, T., Radaviciene, I., & Cherian, J. (2017). Push and pull factors of senior travelers: The lingering influence of past restrictions. *Market-Tržište*, 29(1), 93–108. <https://doi.org/10.22598/mt/2017.29.1.93>
- Vahdat, A., Alizadeh, A., Quach, S., & Hamelin, N. (2021). Would you like to shop via mobile app technology? The technology acceptance model, social factors and purchase intention. *Australasian Marketing Journal*, 29(2), 187–197. <https://doi.org/10.1016/j.ausmj.2020.01.002>
- Vazquez-Martinez, U. J., Morales-Mediano, J., & Leal-Rodríguez, A. L. (2021). The impact of the COVID-19 crisis on consumer purchasing motivation and behavior. *European Research on Management and Business Economics*, 27, 100166.
- Venkatesh, V., Speier, C., & Morris, M. G. (2002). User acceptance enablers in individual decision making about technology: Toward an integrated model. *Decision Sciences*, 33(2), 297–316. <https://doi.org/10.1111/j.1540-5915.2002.tb01646.x>
- Venkatesh, V., Thong, J. Y. and Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157–178. <https://doi.org/10.2307/41410412>
- Verplanken, B., & Wood, W. (2006). Interventions to break and create consumer habits. *Journal of Public Policy & Marketing*, 25(1), 90–103. <https://doi.org/10.1509/jppm.25.1.90>
- Widyanto, H. A., Syahrivar, J., Genoveva, G., & Chairy, C. (2022). Intention to use peer-to-peer (P2P) lending: The roles of perceived structural assurance and perceived critical mass. *Organizations and Markets in Emerging Economies*, 13(1), 183–208. <https://doi.org/10.15388/omee.2022.13.76>
- Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, 59(4), 431–449. [https://doi.org/10.1016/S1071-5819\(03\)00114-9](https://doi.org/10.1016/S1071-5819(03)00114-9)