MAURICE STRATÉGIE

# COVID-19 & **DIGITAL TRADE**

## Mauritius

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# DISCLAIMER


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## LIST OF DIAGRAMS



## LIST OF ABBREVIATIONS

AI - Artificial Intelligence
ATM - Automated Teller Machine
DiD - Difference-in-Differences
GTAP - Global Trade Analysis Project
ICT - Information and Communications Technologies
IoT - Internet of Things
ITS - Interrupted time series analysis
ITU - International Telecommunication Union
MCB - Mauritius Commercial Bank
NPS - National Payment Switch
OECD - Organisation for Economic Co-operation and Development
PLS - Partial Least Squares
POS - Point of Sales
SEM - Structural Equation Modelling
TAM - Technology Acceptance Model
TPB - Theory of Planned Behaviour
UNCTAD - United Nations Conference on Trade and Development
WAP - Work Access Permit
WHO - World Health Organization

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ABSTRACT

## IMPACT OF THE COVID-19 PANDEMIC ON DIGITAL TRADE IN MAURITIUS

In recent decades, the growth of information and communications technologies (ICT) and the move towards the digitalisation of trade and global value chains has been radically transforming the global trade scene. This shift had already been gaining momentum, but the outbreak of the Covid-19 pandemic acted as a catalytic force, compelling businesses and individuals worldwide to swiftly embrace digital tools in order to sustain their operations. Mauritius, a small and isolated island in the middle of the Indian Ocean was not spared from the adverse effects of the Covid-19 pandemic. Nevertheless, the Mauritian economy has been able to overcome the crisis, partly due to acceleration of digital trade and payments. During a webinar hosted in 2020 by Mauritius Africa FinTech Hub on the Covid-19 pandemic, a representative of Mauritius Commercial Bank, the largest bank in Mauritius, reported that 14,000 new e-commerce customers and over 373 percent of new merchants had registered with them during the Covid-19 crisis. The primary objective of this paper is to conduct an analysis of whether the Covid-19 pandemic has catalysed the adoption of digital trade within the Mauritian economy and whether this momentum is being sustained beyond the pandemic era. This paper employs an Interrupted Time Series (ITS) analysis, a quasi-experimental approach similar to the Difference-in-Differences (DiD) method, to compare the changes in digital trade indicators before and after the year 2020 when the country went through a national lockdown.

As per the findings, "digital trade" has seen an enormous increase in 2020. This surge has continued in subsequent years, demonstrating a sustained trend. Interestingly, we observe that by 2022, the volume of mobile banking and mobile payment transactions has surpassed that of internet banking transactions, indicating a noteworthy shift in consumer preferences and payment habits. Based on our analysis, it has been found that Covid-19 had an immediate negative effect but a positive and sustained effect in the long run on digital trade in Mauritius.

## CONTEXT

In recent decades, the growth of information and communications technologies (ICT) and the move towardS the digitalisation of trade and global value chains has been radically transforming the global trade scene. The use of ICT, both intended and unintended, has garnered significant attention from the media, politics, and scholars. During this period, isolated individuals from various parts of the world came together online through their creative pursuits, forming virtual communities. While health, economic, and political concerns often emphasised national borders, ICT allowed individuals to break out of isolation and discover common ground in supporting the well-being of others, regardless of their nationality, health condition, socioeconomic status, or political beliefs.

Since the imposition of sanitary restrictions during Covid 19, the usage of digital devices increased enormously globally and as lockdown around the globe protracted, e-commerce also increased. For instance, Netflix recorded around 16 million new registrations in the first quarter of 2020 (Lestari et al, 2020).

Digital Trade refers to commerce established based on new technologies such as cloud, computer, Internet of Things (IoT), and Artificial Intelligence (AI). Digital trade utilises ICT to realise the efficient exchange of physical goods, digital products and services, and digital knowledge and information. The Organisation for Economic Co-operation and Development (OECD) has defined digital trade as "all international trade that is digitally ordered and/or digitally delivered". E-Commerce on the hand, encompassing the delivery of goods ordered online, is also a form of digital trade. The term e-commerce is used more frequently than digital trade and thus digital trade can be seen as a concept which fuses e-commerce and big data.

Business Pulse Surveys conducted by the World Bank in 18 countries showed that 22 percent of the firms reported starting or increasing use of the internet, social media, and digital platforms. The intensity in the use of digital technologies was higher in financial and ICT services, as well as among larger and formal firms. The growth was particularly notable for e-commerce. For instance, the African platform Jumia saw an increase of over 50 percent, from 3.1 million to 4.7 million, in the volume of transactions during the first six months of 2020, compared with the same period in 2019 (Zeufack et al, 2021). Countries such as Thailand also witnessed an acceleration in the adoption of digital technologies. Since the start of the pandemic, 30 percent of all consumers of digital services are new consumers and Thailand's consumption rate of Internet users has reached around 90 percent, qualified as the second highest in the region after Singapore (Djalante et al., 2020).

Mauritius was not spared from the adverse effects of the pandemic. Following the declaration by the World Health Organization (WHO) of Covid-19 as a public health emergency of international concern, the organisation requested all its member states to prepare and develop a National Strategic Plan for preparedness and response to the outbreak. Mauritius was viewed as a high-risk country in the African region.

Borders were closed even before the detection of local cases. The first 3 Covid-19 cases were detected in Mauritius on 18 March 2020 and the following day a national lockdown was announced. The outbreak of the pandemic has brought a halt to all industries of the economy including tourism, manufacturing, and others. Sanitary measures such as social distancing and compulsory mask wearing in public were also introduced.

The lockdown and the restrictions of movement led to an upsurge in digital usage. Educational classes were conducted via the internet through platforms such as Zoom, Google Classroom and Skype. Work from home became the new normal and e-commerce increased drastically. Payments were done via electronic means and deliveries were done by authorised people holding a "Work Access Permit (WAP)" which allowed limited movement for operators.

As was the case in other countries, the Covid 19 pandemic increased digitalisation in several activities in Mauritius. With the physical distancing measures, there was a surge in online shopping and delivery services. Several incentives were launched to encourage digital adoption in the retail sector such as online platforms. Similar incentives were developed by Singapore where the government launched the "Go Digital" program to facilitate online shopping. Further, 40 million people in the six largest ASEAN digital economies went online for the first time, pushing the online population of the region up to 70 percent (Google et al., 2020).

The pandemic further caused governments to boost the availability of digital services such as e-payments, e-services and online forms to limit in-person interactions and contain the spread of the virus (Lei and Yuwei, 2019). In Mauritius, for instance, payment for car insurance, public service licenses, and road tax were done through a governmental portal.

However, it is unclear whether the momentum in the adoption of digital trade during the pandemic has been sustained following the removal of restrictions or whether it has been a one-off occurrence without having had a lasting impact on business and consumer patterns.

The objective of this paper is therefore to conduct an analysis of whether the Covid-19 pandemic has acted as a catalyst in accelerating the adoption of digital trade within the Mauritian economy and whether this momentum is being sustained beyond the pandemic era.

This paper is structured by first providing a background of the Covid-19 situation in Mauritius, highlighting the main sanitary measures put in place by the Government to situate the context of the study. Second, some main indicators of digital trade in Mauritius are highlighted followed by a literature review. The methodology is then presented pointing out the ITS approach along with its advantages. The result is then analysed.

## COVID 19 IN MAURITIUS

According to WHO figures, Mauritius recorded 309,285 confirmed cased of Covid-19, with 1,053 deaths from 03 January 2020 to 21 September 2023 and administered a total of 2,616,012 vaccine doses as at end of July 2023.

The Covid-19 response in Mauritius benefitted from political engagement at the highest level with a High-Level Committee presided by the Prime Minister established to monitor both domestic and global epidemiological developments and swiftly disseminating crucial information among general public. During the confinement period, the public was restricted for movement and "Work-from-Home" was encouraged to ensure business continuity. However, some employees were allowed to attend on site duty provided they were in possession of a WAP.

The WAP were approved by a monitoring team under the Government and only essential workers such as healthcare workers, police force, bakery, supermarkets staff, fire services staff and others were obtaining the permit initially. The application was made online, and a mobile app called "BeSafe Moris" was introduced through which residents could access the digital vaccination card, their WAP and receive daily updates on the number of active cases and deaths recorded in the island.

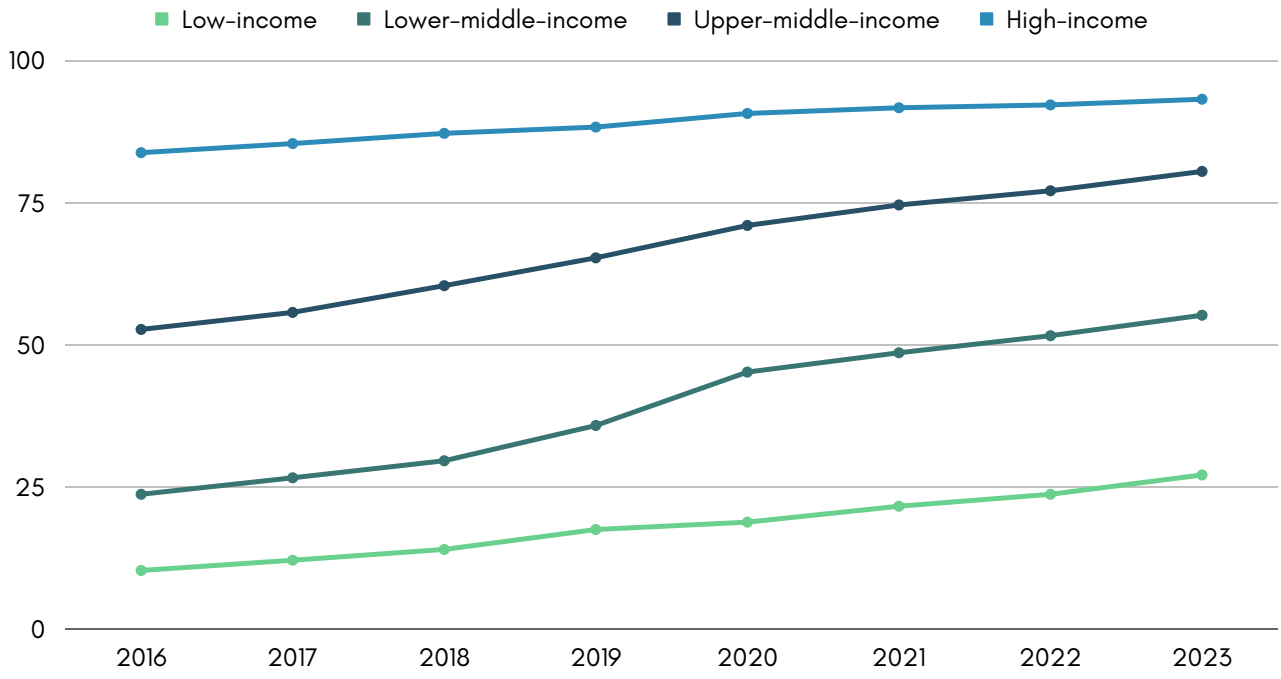
A strong adherence of the population to physical distancing measures in place was noted. For instance, while supermarkets opened 6 days a week, Mauritians were only allowed to shop twice a week in alphabetical order using family names. One person per household was allowed to shop for 30 minutes, and the wearing of protective masks was compulsory.

In these periods of restricted movement, e-commerce facilities and platforms emerged rapidly, providing a convenient alternative to traditional commercial activities as a means of overcoming the lockdown and providing a safer means for making purchases and transactions.

## DIGITAL TRADE INDICATORS IN MAURITIUS

The level of participation in digital technology and the Internet is a powerful indicator of an economy's capacity to leverage e-commerce. Today, around 5.3 billion people is connected to the internet. This shows a growth rate of 6.1 percent over 2021, up from 5.1 per cent for 2020-2021. Although internet penetration has been increasing globally, there is still a huge gap in terms of connectivity across high income countries and low-income countries. While a major share of the population in high income countries is connected to the internet, internet connection remains a privilege for a 'lucky' minority in lower middle income and low-income countries. High income countries have 93.2 per 100 inhabitants using the internet in 2023 compared to 88.3 per 100 inhabitants in 2019. On the other hand, low-income countries registered 27.1 per 100 inhabitants using internet in 2023. On a global scale, the number of individuals using internet has been improving over the years as illustrated in the diagram below.

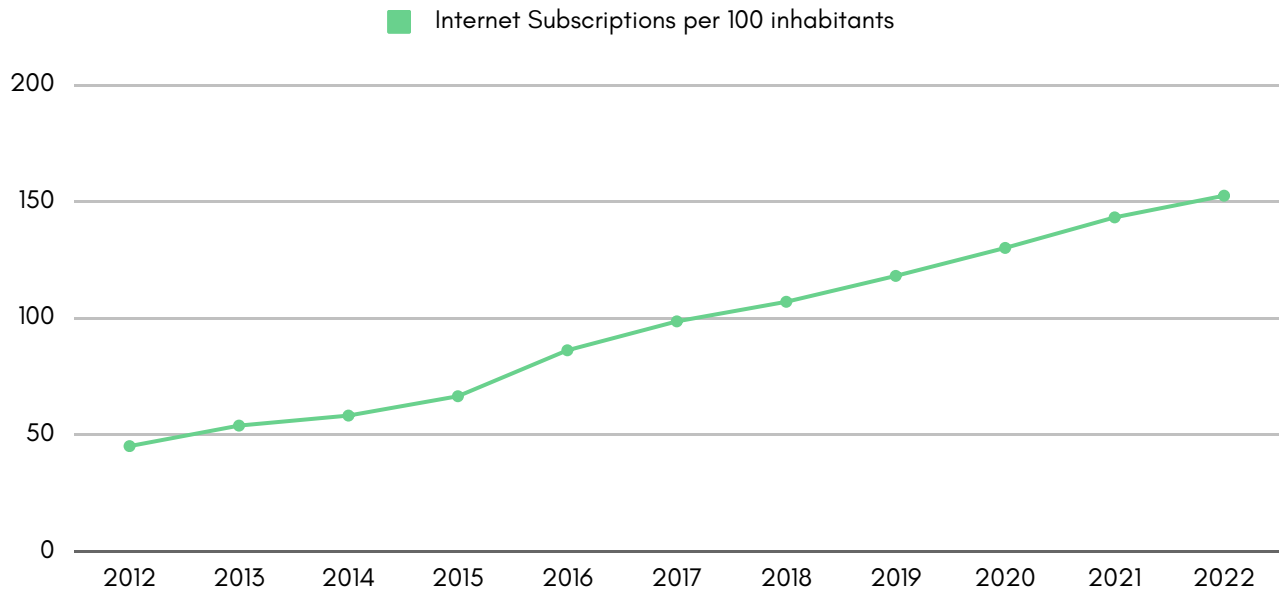
**Figure 1: Individuals using internet per 100 inhabitants**




Source: International Telecommunication Union 2023

Internet subscription per 100 inhabitants kept an upward trend over the last 10 years as illustrated in Figure 2 below.

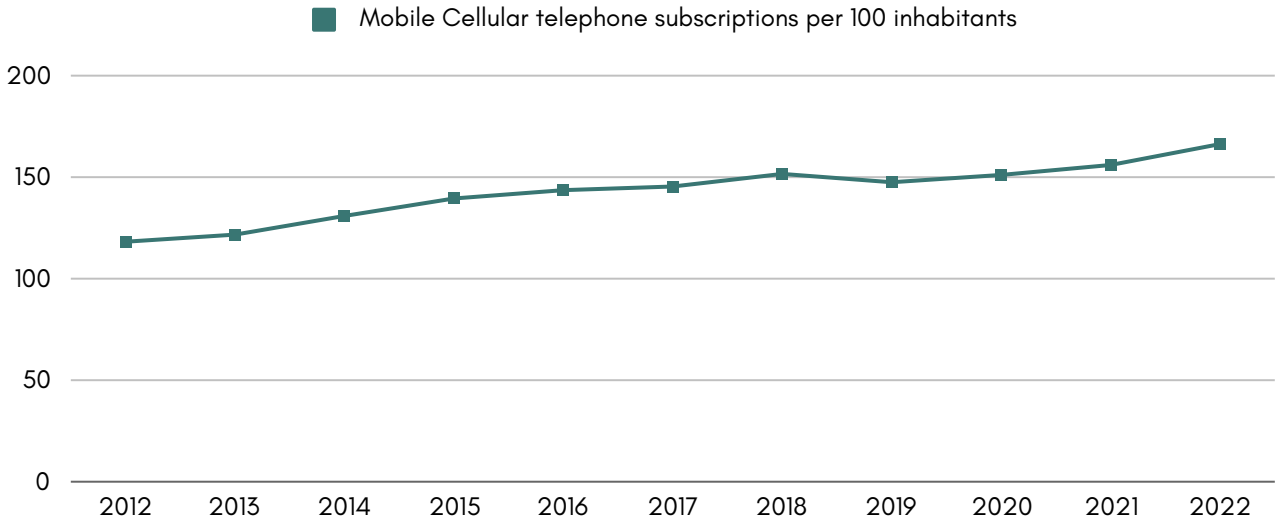
**Figure 2 : Internet subscriptions per 100 inhabitants**




Source: Statistics Mauritius

Additionally, mobile cellular subscription per 100 inhabitants has seen an increase. In 2022, mobile subscription per 100 inhabitants reached 166.3 compared to 151.1 and 147.5 in 2020 and 2019 respectively. The trend is depicted in the figure below.

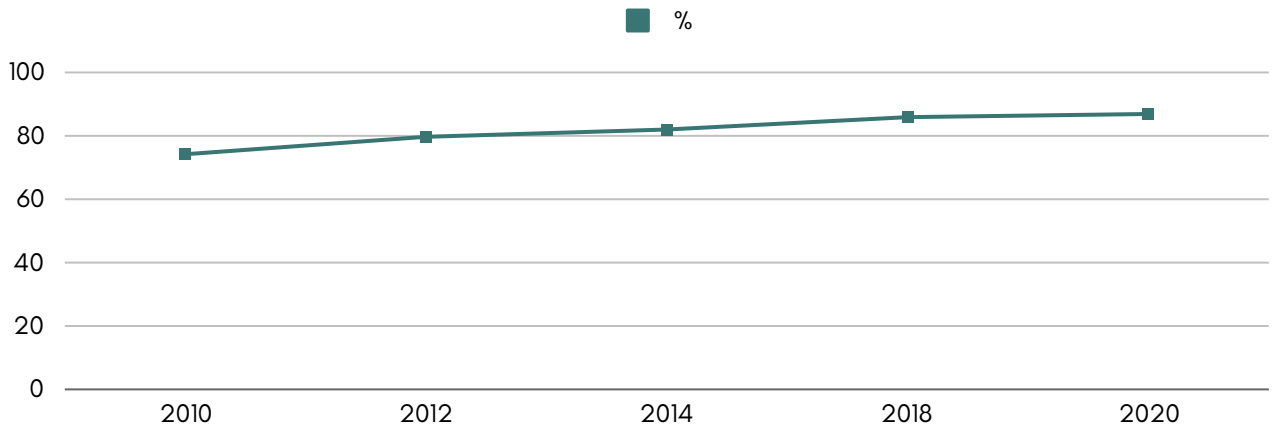
**Figure 3: Mobile Cellular telephone subscriptions per 100 inhabitants**




Source: Statistics Mauritius

For most internet users, mobile phone is their prime means to connect to the internet. The figure below illustrates the proportion of individuals using a mobile (cellular) or smart telephone in Mauritius.

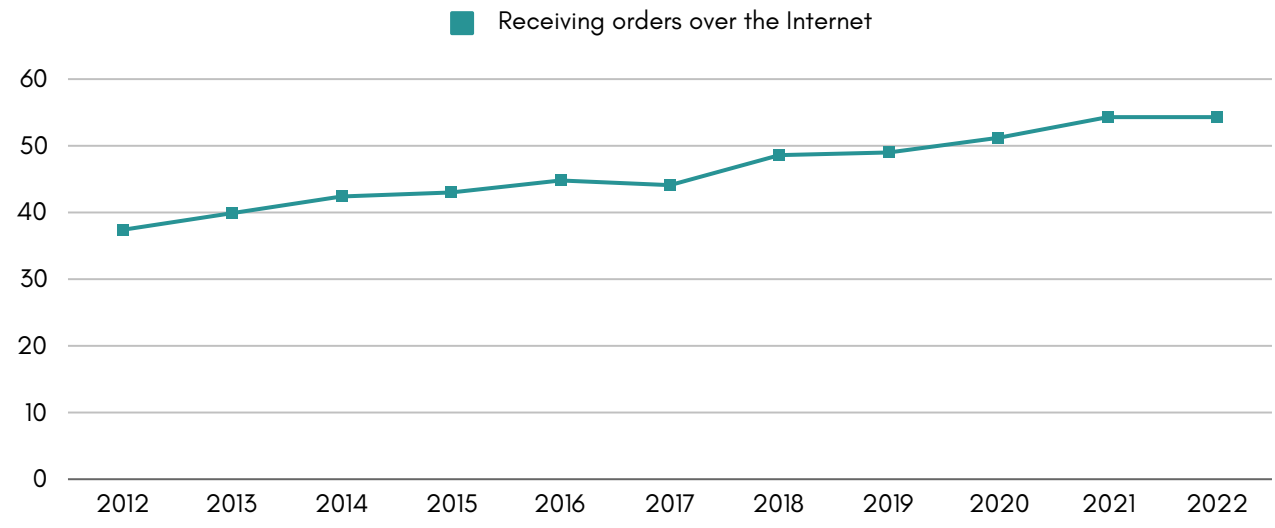
**Figure 4: Individuals using a mobile cellular telephone.**




Source: Statistics Mauritius

One factor which has influenced the number of internet users is the increased adoption of smartphones. This, coupled with more secure and user-friendly payment systems, has led to an acceleration in e-commerce. In 2019, the Bank of Mauritius has launched a National Payment Switch (NPS), a new system that interfaces with Points of Sales (POS), Automated Teller Machines (ATMs), mobile payments and other commerce portals and consolidate and channel them to one or more payment processor for authorisation and settlement. The NPS is a new feature in the card payment system and offers an option to route transactions made with locally issued cards to a central point for settlement at the Bank instead of being routed through the network of international card schemes. The figure below illustrates the trend of orders received over the internet over time. In 2012, only 27.8 percent orders were made over the internet compared to 2022 where it rose to 54.3 percent.

**Figure 5: Percentage of companies receiving orders over the internet.**




Source: Statistics Mauritius

From the trends seen above, it can be summarised that the use of digital technologies has continuously increased over time. People are using the internet more than before and mobile subscriptions have also seen improvement.

## LITERATURE REVIEW

With restrictions on movement, closures, and lockdowns in most countries across the globe, the demand for online collaboration tools grew worldwide and electronically delivered services replaced physically delivered services in many parts of the world. The UNCTAD (2020) conducted a survey "Covid-19 and E-Commerce" which provides an indication of the growth and change in habit towards online platforms for shopping and entertainment purposes. Similarly, businesses across the globe adopted new models to ensure continuity by introducing teleworking or work from home and more online sales of goods and services.

Hu et al (2022) conducted research on whether digital technologies have helped in recovering China's exports and growth after the pandemic. The authors used monthly data on Chinese exports to around 40 different regions and covering 97 products for the period January 2019 to June 2020. A generalised difference-in-differences analysis was used and found that Covid-19 pandemic has inhibited China's export trade overall, but digital trade has significantly promoted trade, and the supply mechanism has played a significant role in promoting the recovery of exports.

Other studies conducted by researchers such as Zhang (2022) measured the impact of digital economy on the economic growth. The authors used an evaluation index system and a panel data to analyse the impact on the economic growth of countries along the "Belt and Road" before Covid-19. After that, a Global Trade Analysis Project (GTAP) was implemented to measure the impact of Covid-19 on digital industries and trade patterns and found that Covid-19 generally boosted the demand for digital industries.

In Pakistan, Sajid et al (2022) found that the global e-commerce industry touched phenomenal growth during Covid-19, whereas Pakistan's e-commerce industry still holds a huge potential and has not fully boomed yet. It introduces a model grounded in the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB). Additionally, it explores the moderating influence of gender and payment methods. To analyse the variables, the research employed the Partial Least Squares (PLS) method to execute Structural Equation Modelling (SEM) and gathered data from 266 participants. The findings reveal a significant and positive influence of perceived benefits, perceived ease of use, perceived enjoyment, and social influence on consumers' intentions. However, they also indicate that gender and payment methods have an insignificant impact as moderating variables on perceived ease of use and intention, and intention and actual behaviour, respectively.

Nevertheless, other studies have investigated the effects of the Covid-19 pandemic on various sectors of the economy, including the tourism industry. Li (2022) conducted research to assess how the digital economy impacted the fusion of China's cultural tourism sector within the context of the pandemic. The study found that the evolution of the digital economy during the Covid-19 outbreak facilitated the amalgamation of China's cultural tourism industry. Furthermore, in comparison to the year 2019, the digital economy significantly reinforced the integration of the cultural tourism industry. Throughout the Covid-19 crisis, the progression of the digital economy continued to drive the integration of China's cultural tourism sector, and the favourable impact of the digital economy on this integration has progressively strengthened compared to previous periods.

## METHODOLOGY

In this paper, we employed Interrupted Time Series (ITS) analysis to quantify the impact of Covid-19 on digital trade in Mauritius. ITS is a quasi-experimental design frequently employed in various research fields to evaluate the impact of interventions, policies, or events on a particular outcome over time. Its strength lies in its ability to provide valuable insights into the longitudinal effects of time-delimited interventions. This method is especially advantageous because it allows researchers to assess not only the immediate impact of an intervention but also how that impact evolves over an extended period. It is useful in distinguishing between transient and long-term effects and helps in identifying whether factors other than the intervention itself might explain changes in the outcome of interest. ITS approach also adapts to a variety of situations, allowing researchers to tailor the design to the specific research question and to the available data. This method can be conducted with relatively small sample sizes, making it a cost-effective and practical approach for many research studies. Lastly, it does not require random assignment of participants which is particularly valuable in situations where randomisation would be considered unfair or impractical, such as when evaluating interventions in healthcare or education settings.

Numerous scholarly works highlight the utility of ITS analysis in different contexts. For instance, a paper by Wagner et al. (2002) conducted a thorough ITS analysis to assess the impact of a specific healthcare policy on patient outcomes, shedding light on the effectiveness of the intervention in a real-world setting. Similarly, Pinto et al (2022) used an ITS to analyse the trend of congenital syphilis cases in Brazil following an intervention by the government to control the infection. Taljaard et al (2014) also implemented the ITS to analyse the intervention to improve quality in pre-hospital ambulance care while Feigl et al. (2015) investigated the impact of a national ban on smoking in high schools, and selected a control based on age by comparing trends in smoking prevalence among those aged 12–18 years compared with those aged 19–24 years using the ITS methodology.

Similarly, Kontopantelis et al. (2015) examined the impact of a national primary care financial incentive scheme on trends in consultation rates among patients with severe mental illness, compared with matched patient controls with no severe mental illness. Other papers which used the ITS approach include Kiseley et al. (2011) who evaluated the impact of an increase in taxation of 'alcopops' on alcohol-related harm, by comparing the effect in young people aged 15–29 with the effect in those aged 30–49. Chereni et al. (2017) who assessed the impact of adding an app intervention to decrease antibiotic prescribing across three teaching hospitals using the same methodology. Perski et al. (2020) assessed whether the coronavirus outbreak influenced the downloads of a Popular Smoking Cessation App in UK Smokers. Likewise, Brydon et al. (2020) evaluated the transition from analogue to digital diagnostic imaging on mammography volumes by using the ITS approach. Wilkinson et al (2019) evaluated smoking prevalence following tobacco tax increases in Australia between 2001 and 2017 using an ITS analysis. Hategeka et al. (2020) made an evaluation of health system quality improvement interventions in USA. In a similar way, Khan et al. (2021) examined the impact of a regional smoking cessation program on referrals and use of Quitline services in Queensland, Australia. Thayer et al. (2021) analysed the lockdown policies in India to carry out a national-level analysis of COVID-19 incidence in India while Montante and Hernandez-Rodriguez (2023) evaluated the economic interventions during the 2008 financial and 2009 H1N1 crisis in Unites State-Mexico-Canada Agreement using the ITS methodology.

## MODEL SPECIFICATION

ITS is a two phases analysis. In the first instance, it analyses what happen to the outcome variable following an event or intervention. In this case, the equation would be specified as below:

$$Y = b_0 + b_1 T + b_2 D + b_3 P + e_t$$

In the second instance, ITS analyses what would have happen to the outcome variable should the event or intervention not occurred. In this case, the model assumes that there has been no immediate nor sustained effect as the event did not occur. The counterfactual model would be as follows:

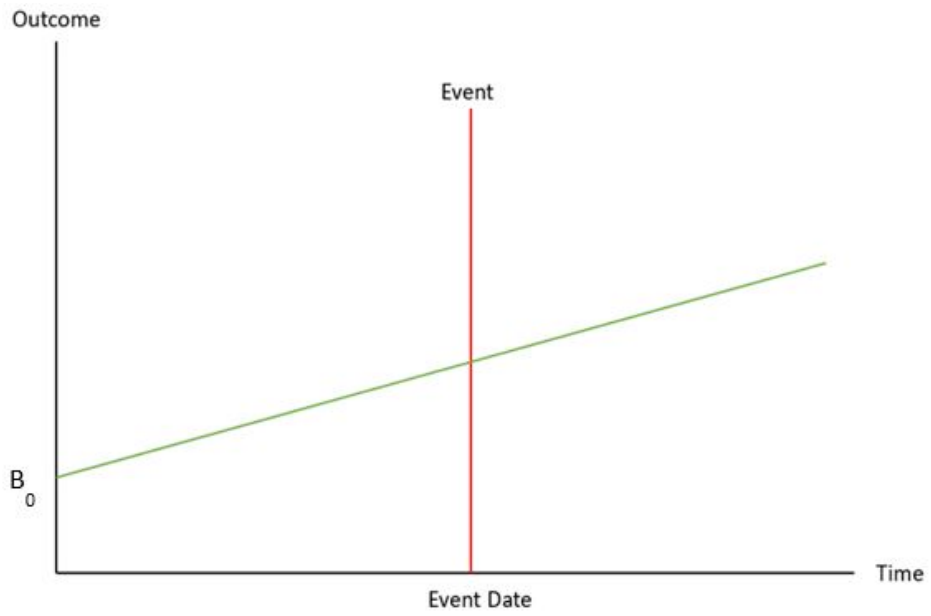
$$Y = b_0 + b_1 T + e_t$$

Where, in our study:

- Y is digital trade,
- T is the continuous variable which points out the time passed from the beginning of the observational period,
- D is the dummy variable which points out data collected before (=0) and after (=1),
- P is the continuous variable which points out the time passed since the event (outbreak of Covid 19 in Mauritius) has occurred. P is equal to 0 before the pandemic.
- $e_t$ is the error term

Based on the equations above, we can graphically illustrate the different scenarios following the ITS assessment.

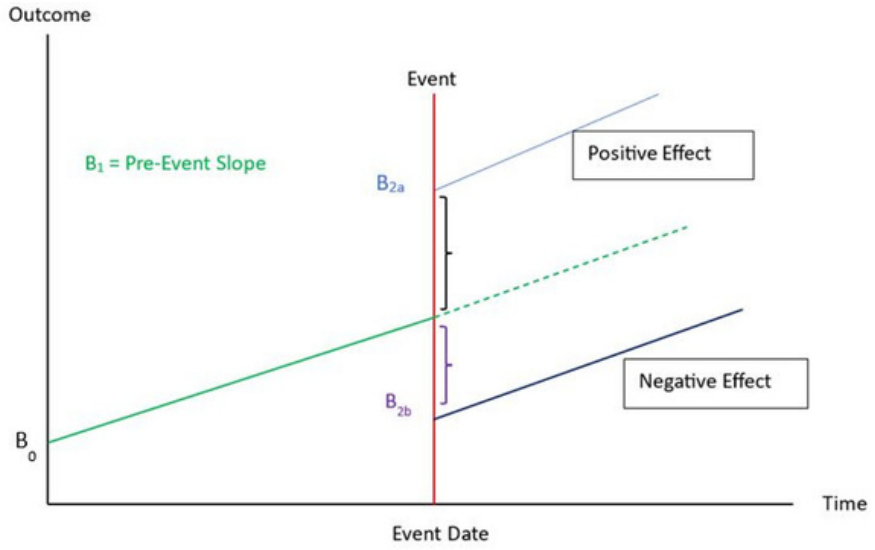
**Diagram 1: No effect Scenario**




Source: Authors Computation

The diagram above shows the possible scenario where there is no effect of the event on the observed variable. In this case, the outcome will continue its pre-event trend.

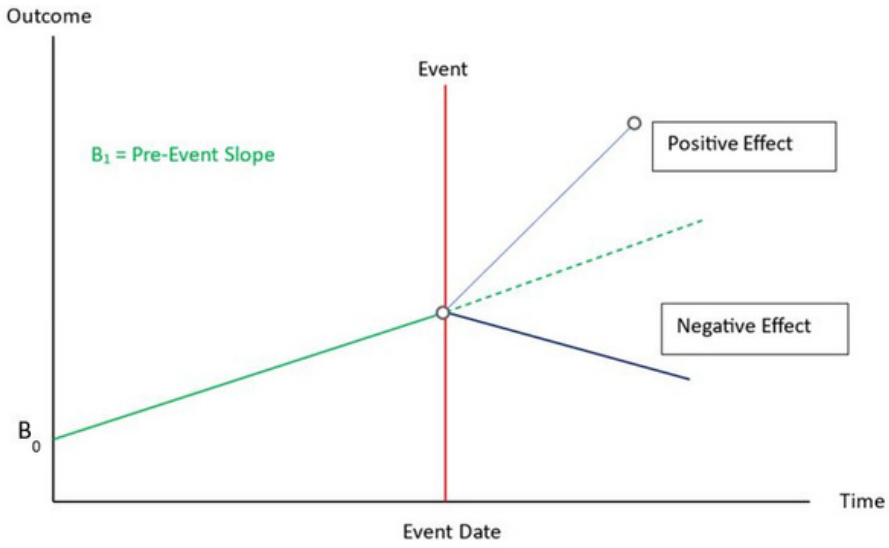
**Diagram 2: Immediate but no sustained effect Scenario**




Source: Authors Computation

Diagram 2 illustrates a scenario where there is an immediate effect but no sustained effect. In this situation, there is a break in the data on the event, but the post event slope remains same as the pre-event slope. In case there is a positive effect, the line will shift to B2a and if there is a negative effect, it will shift to B2b.

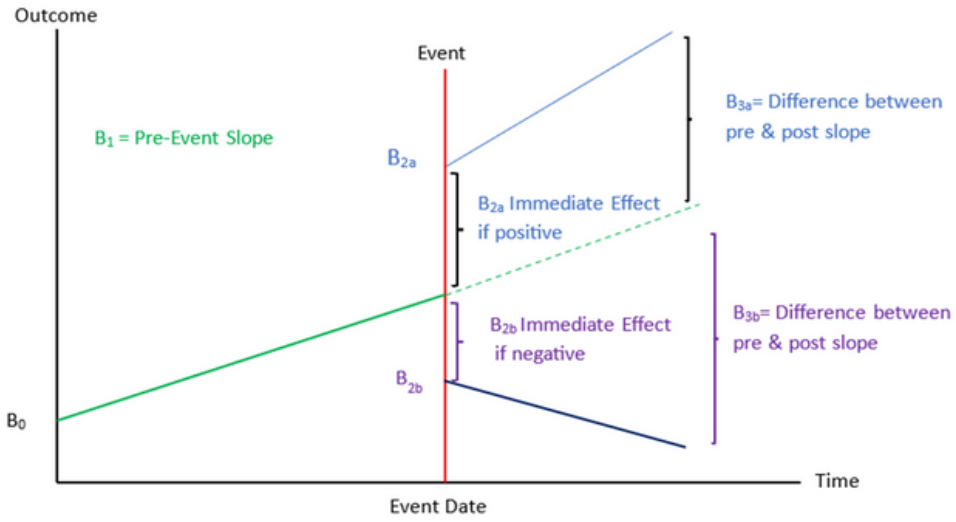
**Diagram 3: No immediate effect but sustained effect Scenario**




Source: Authors Computation

Diagram 3 above represents a scenario where there is no immediate effect but sustained effect. In this situation, the post event slope changes just after the event. In case, there is a positive effect, the post event slope will be steeper than the pre-event slope and vice-versa for negative effect.

**Diagram 4: Both immediate and sustained effect Scenario**




Source: Authors Computation

Diagram 4 above depicts both immediate and sustained effect (there are both break in the data due to the event and the post event slope differs from the pre-event slope).

In the above diagram, $B_0$ is the baseline level of the outcome, $B_1$ is the pre-event slope (before Covid 19 pandemic), and the red line depicts the event (the date of Covid 19 pandemic outbreaks in Mauritius). The slope is expected to change after the event. In this case, $B_2$ would illustrate the immediate effect that occurs after the event and $B_3$ would represent the sustained effect of the event on the outcome, computed by difference between pre and post slope.

In case digital trade has increased following the pandemic, the immediate effect would be at $B^{2a}$ and the positive sustained effect of the pandemic on digital trade will be measured by $B_{3a}$ with a new $slo_{2b}$ showing an upward trend. On the other hand, if the pandemic has negative impact on digital trade, B2b would show the negative immediate effect and $B^{3b}$ would illustrate the negative sustained effect.

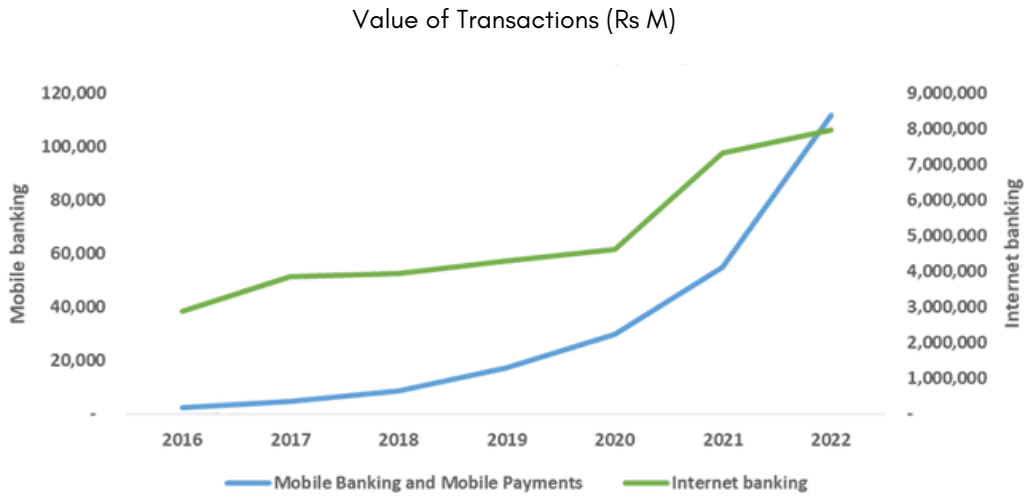
## DESCRIPTION OF VARIABLES

Digital trade transactions are components of existing trade transactions, as measured in international merchandise trade statistics and services trade statistics. In general, international trade statistics should cover digital trade transactions. It is, however, difficult to record digital ordering and delivery. One of the main reasons identified is the involvement of small firms and households in international trade, and their involvement may not be adequately covered by traditional data sources.

While there are ongoing endeavours to improve the inclusion of digital trade in official trade statistics, it will take some time before robust measures are identified. At the same time, measuring the nature and spread of digitalisation is also challenging.

To measure digital trade, we have combined internet banking transactions, mobile banking, and payments as a proxy for the period January 2016 to June 2023 collected from the Bank of Mauritius. We obtained a total of 90 observations.

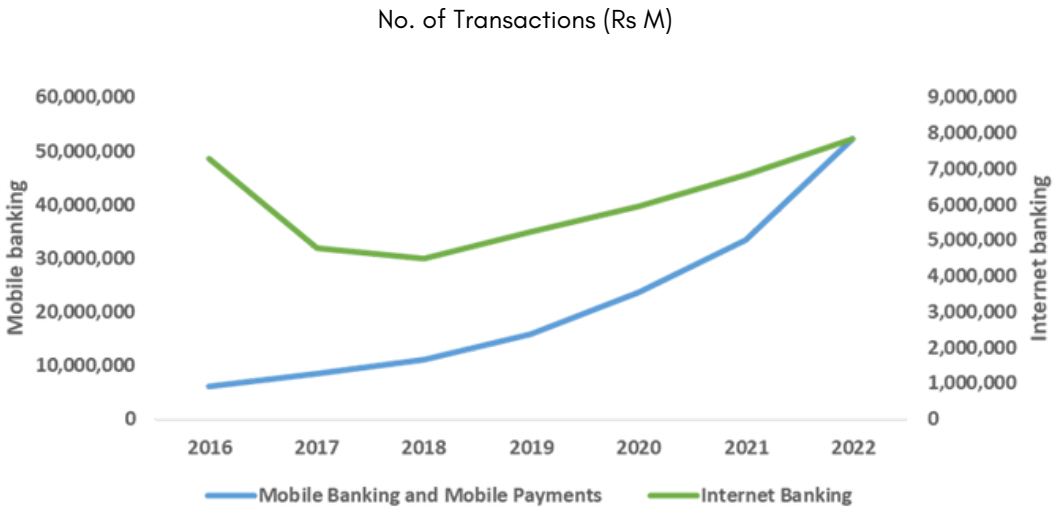
**Figure 6: Evolution of mobile banking, payments and Internet banking (Value of transactions)**




Source: Bank of Mauritius

Figure 6 above gives an overview of the trend in mobile banking and mobile payments and internet banking in terms of value of transactions from 2016 to 2022. In 2022, mobile banking and mobile payments exceeded internet banking.

**Figure 7: Evolution of mobile banking, payments and Internet banking (No of transactions)**




Source: Bank of Mauritius

In 2016, there was a drop in the number of transactions in internet banking and in 2020, after Covid-19 a rise was noted. A drastic increase was recorded in the number of transactions of mobile banking and mobile payment post-Covid.

## RESULT ANALYSIS

The analysis through the ITS give the following results:

**Table 1: Results**

| | **Coefficient** |
|---|---|
| Time | 3.31 *** |
| Event | 2.39 |
| Time Since Event | 5.00 *** |
| Constant | 231.38 *** |

*** : significant at p < 0.05

Consequently, the ITS model equation can be written as follows:

$$Y = 231.38 + 3.32\,T + 2.39\,D + 5.00\,P$$

The Time coefficient indicates digital trade's trend before the outbreak of the Covid pandemic. It is positive and significant, indicating that digital trade increases over time.

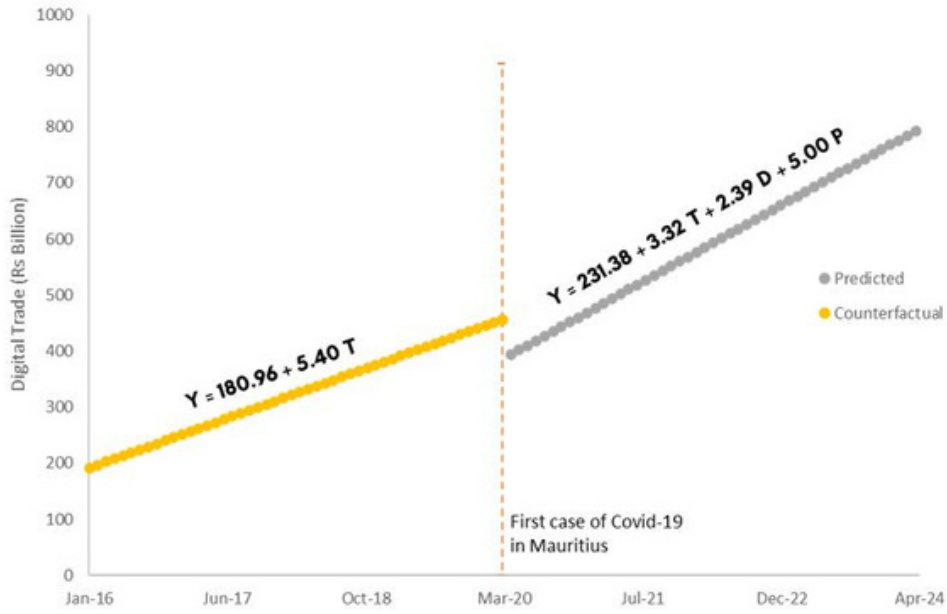
The Event coefficient indicates the change in digital trade immediately after the outbreak of the Covid pandemic. We can see that the immediate effect is negative indicating that the Covid pandemic initially decreased digital trade.

The Time Since Event coefficient indicates that the trend has changed after the outbreak of the Covid pandemic. The sustained effect is positive and significant, indicating that for each month that passes after the outbreak of Covid pandemic, the digital trade increases.

Had the Covid 19 pandemic not impacted Mauritius, the outcome of digital trade would have been determined by the following counterfactual equation: **Y = 180.96 + 5.40 T**

The diagram illustrates a mapping of the data generated by the predicted and counterfactual equations of the ITS model.

**Diagram 5: Mapping of the Impact of COVID Outbreaks on Digital Trade in Mauritius**



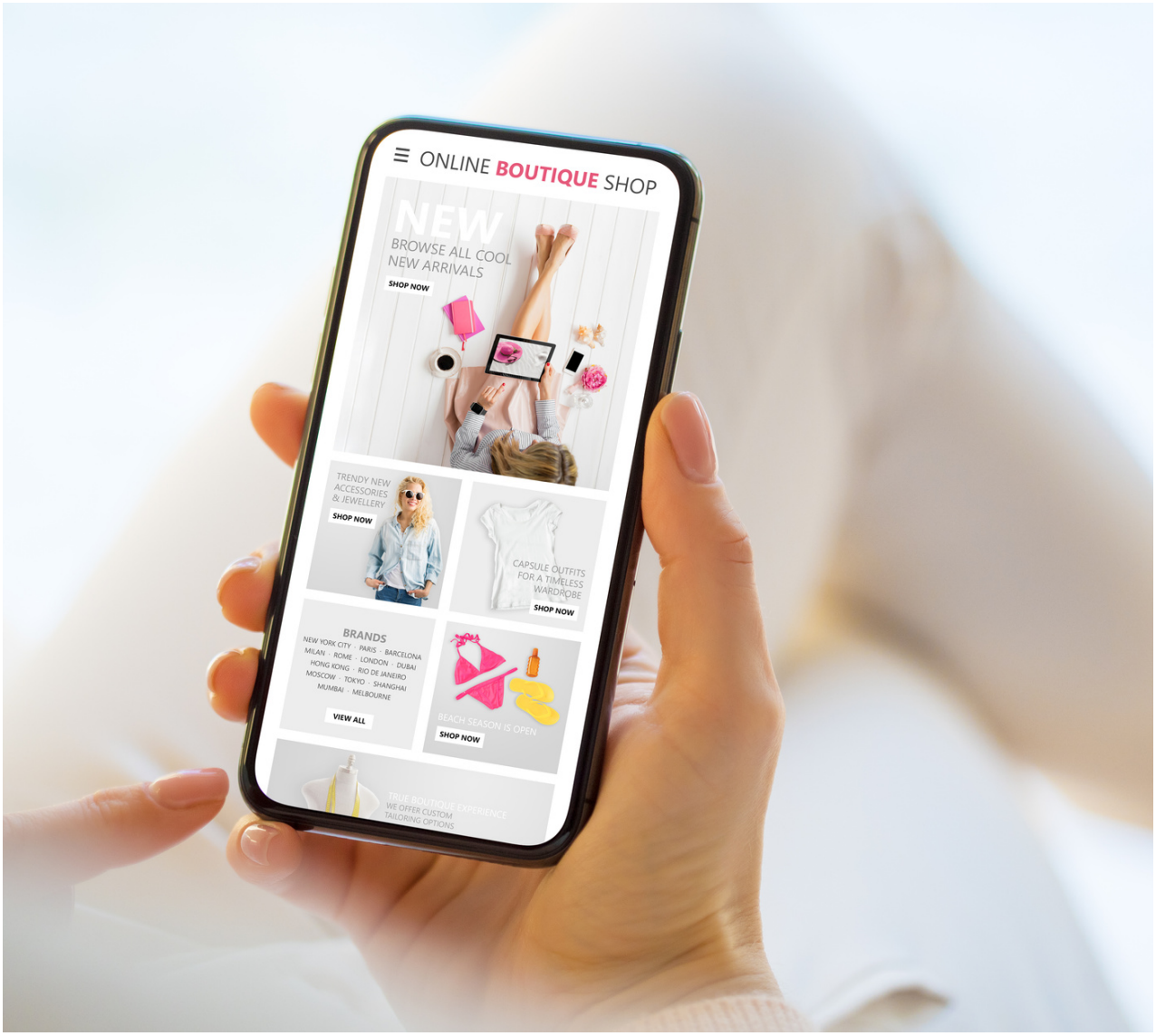

Source: Authors Computation

The difference between the predicted and counterfactual shortly after the Covid outbreaks in Mauritius can be partly explained by the fact that there was a national lockdown in the country whereby most of the inhabitants had restrictions on movement and majority of businesses were operating with minimum resources. With the resumption of operations, many businesses started engaging in digitalisation.

## CONCLUSION

It must be recalled that the Covid 19 pandemic first outbreak in Mauritius happened in March 2020 and the WHO announced in May 2023 that Covid is no longer a pandemic. Moreover, there is no universally accepted definition and measurement of digital trade. For this research paper, we have combined the transactional values of internet banking and mobile banking as proxy for digital trade for the period Jan 2016 to June 2023.

ITS only tells if there is an immediate change after the event or intervention and whether the slope has changed following the event or intervention. There is no statistical test to look at whether there is a statistically significant difference between a predicted outcome and its counterfactual. It could be that the effect of the event on the variable outcome varies over time and that other factors impact the outcome. ITS provides a simplified analysis of the impact of event on an outcome and avoids complications from the non-availability of large datasets. While it provides a first level of analysis, it must be used along other methods to provide more in-depth analysis of the occurrence of events.



## REFERENCES

Bank of Mauritius (2023), Monthly Statistical Bulletin, Bank of Mauritius.

Brydon, Megan & Kephart, George & Payne, Jennifer & Blake, John., (2020). Transitioning to Full Field Digital Mammography in Nova Scotia: Using Interrupted Time Series Methods to Study the Impact of Technology Change on Mammography Volumes. Journal of Medical Imaging and Radiation Sciences. 51. 10.1016/j.jmir.2020.03.001.

Carmín C. L. Montante & Clemente Hernandez-Rodriguez., (2023) Evaluating economic interventions during the 2008 financial and 2009 H1N1 crisis in USMCA, Macroeconomics and Finance in Emerging Market Economies, DOI: 10.1080/17520843.2023.2233266

Charani E, Gharbi M, Moore LSP, Castro-Sanchéz E, Lawson W, Gilchrist M, Holmes AH., (2017). Effect of adding a mobile health intervention to a multimodal antimicrobial stewardship programme across three teaching hospitals: an interrupted time series study.

Djalante, R., Lassa, J., Setiamarga, D., Sudjatma, A., Indrawan, M., Haryanto, B., Mahfud, C., Sinapoy, M.S., Djalante, S., Rafliana, I. and Gunawan, L.A., (2020). Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. Progress in disaster science, 6, p.100091.

Feigl AB, Salomon JA, Danaei G, Ding EL, Calvo E., (2015) Teenage smoking behaviour following a high-school smoking ban in Chile: interrupted time-series analysis. Bull World Health Organ.
Google, Temasek and Bain., (2020). E-Conomy SEA 2020.

Hategeka C, Ruton H, Karamouzian M, Lynd LD, Law MR., (2020) Use of interrupted time series methods in the evaluation of health system quality improvement interventions: a methodological systematic review.

Hu F, Qiu L, Xi X, Zhou H, Hu T, Su N, Zhou H, Li X, Yang S, Duan Z, Dong Z, Wu Z, Zhou H, Zeng M, Wan T and Wei S., (2022). Has COVID-19 Changed China's Digital Trade? —Implications for Health Economics. Front. Public Health 10:831549. doi: 10.3389/fpubh.2022.831549.

Irawan, A.W., Dwisona, D. and Lestari, M., (2020). Psychological impacts of students on online learning during the pandemic COVID-19. KONSELI: Jurnal Bimbingan dan Konseling (E-Journal), 7(1), pp.53-60.

Khan A, Green K, Khandaker G, Lawler S, Gartner C., (2021). The impact of a regional smoking cessation program on referrals and use of Quitline services in Queensland, Australia: a controlled interrupted time series analysis.

Kisely, S.R., Pais, J., White, A., Connor, J., Quek, L.H., Crilly, J.L. and Lawrence, D., (2011). Effect of the increase in "alcopops" tax on alcohol-related harms in young people: a controlled interrupted time series. Medical journal of Australia, 195(11-12), pp.690-693.

Kontopantelis E, Doran T, Springate DA, Buchan I, Reeves D., (2015). Regression based quasi-experimental approach when randomisation is not an option: interrupted time series analysis. BMJ. 2015 Jun 9;350:h2750. doi: 10.1136/bmj.h2750. PMID: 26058820; PMCID: PMC4460815.

Lestari, Diana/Darma, Dio Caisar et. al., (2020). International trade in the Covid-19 outbreak : is the digital economy working?. In: International journal of business & management 8 (2), S. 86 - 92

Li, X., Liang, X., Yu, T., Ruan, S. and Fan, R., (2022). Research on the integration of cultural tourism industry driven by digital economy in the context of COVID-19—based on the data of 31 Chinese provinces. Frontiers in Public Health, 10, p.780476

OECD (2017a), "Measuring digital trade: towards a conceptual framework", STD/CSSP/WPTGS(2017)3
Mauritius Africa FinTech Hub (2020) Webinar on Opportunities and challenges for FinTech post-COVID in Mauritius: The future of digital payments. https://mauritiusfintech.org/blog/opportunities-challenges-fintech-post-covid-mauritius-future-digital-payments/

Perski O, Herbeć A, Shahab L, Brown J., (2020) Influence of the SARS-CoV-2 Outbreak on the Uptake of a Popular Smoking Cessation App in UK Smokers: Interrupted Time Series Analysis.

Pinto, R., Valentim, R., da Silva, L.F., de Souza, G.F., de Moura Santos, T.G.F., de Oliveira, C.A.P., Dos Santos, M.M., Miranda, A.E., Cunha-Oliveira, A., Kumar, V. and Atun, R., (2022). Use of interrupted time series analysis in understanding the course of the congenital syphilis epidemic in Brazil. The Lancet Regional Health-Americas, 7.

Ramphul K., (2022) The fight against COVID-19 in the small island of Mauritius. Acta Biomed. Jan 19;92(6):e2021452. doi: 10.23750/abm.v92i6.12199. PMID: 35075064; PMCID: PMC8823574.

Sajid S, Rashid RM and Haider W., (2022). Changing Trends of Consumers' Online Buying Behavior During COVID-19 Pandemic With Moderating Role of Payment Mode and Gender. Front. Psychol. 13:919334. doi: 10.3389/fpsyg.2022.919334

Statistics Mauritius., (2023) Historical Series ICT, Statistics Mauritius.

Taljaard, M., McKenzie, J.E., Ramsay, C.R. et al., (2014) The use of segmented regression in analysing interrupted time series studies: an example in pre-hospital ambulance care. Implementation Sci 9, 77 (2014). https://doi.org/10.1186/1748-5908-9-77

Thayer WM, Hasan MZ, Sankhla P, Gupta S. (2021). An interrupted time series analysis of the lockdown policies in India: a national-level analysis of COVID-19 incidence.

UNCTAD., 2020 "COVID-19 has changed online shopping forever".

Wagner, A.K., Soumerai, S.B., Zhang, F. and Ross-Degnan, D., (2002). Segmented regression analysis of interrupted time series studies in medication use research. Journal of clinical pharmacy and therapeutics, 27(4), pp.299-309.

Wilkinson, A.L., Scollo, M.M., Wakefield, M.A., Spittal, M.J., Chaloupka, F.J. and Durkin, S.J., (2019). Smoking prevalence following tobacco tax increases in Australia between 2001 and 2017: an interrupted time-series analysis. The Lancet Public Health, 4(12), pp.e618-e627.

World Bank "Covid-19 Business Pulse Surveys Dashboard". The World Bank Group. Washington, DC. 2020.
World Trade Organization - Digital Trade; Opportunities and Challenges[https://www.wto.org/english/tratop_e/devel_e/digital_trade2022_e.pdf]

Zeufack, A.G., Calderon, C., Kabundi, A., Kubota, M., Korman, V., Raju, D., Abreha, K.G., Kassa, W. and Owusu, S., (2022). Africa's Pulse, No. 25, April 2022. Washington, DC: World Bank.
Zeufack, A.G., Calderon, C., Kambou, G., Kubota, M., Korman, V., Canales, C.C. and Aviomoh, H.E., (2021). COVID-19 and the future of work in Africa: Emerging trends in digital technology adoption. World Bank.

Zhang J, Zhao W, Cheng B, Li A, Wang Y, Yang N and Tian Y., (2022). The Impact of Digital Economy on the Economic Growth and the Development Strategies in the post-COVID-19 Era: Evidence From Countries Along the "Belt and Road". Front. Public Health 10:856142. doi: 10.3389/fpubh.2022.856142

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