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COVID-19 vaccine-induced recovery and the implications of vaccine apartheid on the global tourism industry

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ABSTRACT
According to United Nations, World Tourism Organization COVID-19 has had the most devastating impact on the entire global tourism value chain, which resulted in a 74% decline in international passenger arrival, a US$1.3 trillion loss in international tourism receipts, over the US $2 trillion loss of global domestic product and placing between 100 and 120 million jobs at risk globally. While the initial impact of the pandemic was uniform across the world, the recovery was expected to be varied across the region due to inequitable access to the COVID-19 vaccine. This study seeks to examine the implications of vaccination inequity on tourism recovery in the global tourism market. The study uses secondary, archival data and harnesses the advantages of big data generated from online activities from tourists and tourism companies obtained from authoritative sources. The study found that inequitable access to vaccinations produced a skewed recovery favouring vaccinated regions concentrated in the developed world, leaving poor regions such as Africa behind. The robot system characterising the vaccine-induced recovery had also created a vaccine diplomatic nightmare that scuttled global tourism recovery efforts. To ensure sustainable recovery, there is a need to ensure global vaccination access by rechannelling some of the excess vaccines in developed countries to countries that needs them to ensure the opening up of the entire tourism global market and reduce vulnerabilities that are coming from COVID-19 variants, which poses a threat to the gains made from the current vaccination program. The study concludes that there will not be any meaningful economic recovery without a wholesale approach covering the entire global population.

1. Introduction

The COVID-19 pandemic dealt a considerable blow to the global economy (Ibn-Mohammed et al., 2020; Şenol & ZEREN, 2020) as markets spined into turmoil when coronavirus was declared a pandemic by World Health Organization (WHO) in early March 2020. Various sectors of the global economy, such as agriculture and food supply, are among the sectors that were adversely affected by the COVID-19 pandemic (Poudel et al., 2020; Mardones et al., 2020; Kansiime et al., 2021). Deaton and Deaton (2020) argued that COVID-19 created income shocks which had a multiplier effect on tourism activities that such money is usually spent on.

Arguably, one of the worst affected economic sectors globally was the tourism industry. The market and supply chain was cut off due to border closures as various countries instituted lockdowns shutting down tourists were seen as a vector of COVID-19 (Armutlu et al., 2021; Lapko et al., 2022; Matsuura and Saito, 2022). According to Gallego and Font (2021), the pandemic resulted in a drop in air passenger demand. This devastatingly impacted airport, aviation car rental companies, hotels, and destination markets (Nhamo et al., 2020a). Rogerson and Rogerson (2021) and Dube (2021) also argued that the pandemic resulted in the dwindling of the international tourism market. Many tourism markets turned to the domestic market for relief as the international market vanished amidst health and safety concerns. The COVID-19 pandemic curtailed the movement of goods and people (Chakraborty and Maity, 2020), with implications for various tourism destinations worldwide. Airlines (Vinod, 2020; Maneenop and Kotcharin, 2020), restaurants (Dube et al., 2021a,b,c), hotels (Foo et al., 2020), cruise ships (Ilhan, 2020), car rental industry (Nhamo et al., 2020), national parks (Souza et al., 2021) and other tourist destinations were nearly brought to a halt at the height of the 1st and the second wave of the pandemic that took place in 2020. Evidence reveals that in 2020 alone, the global travel and tourism industry witnessed losses of about US $4.5 trillion in GDP, with the sector shrinking 49.1% against a global economic shrinkage of 3.1% (United Nations World Tourism Organization - UNWTO, 2021). The impact on tourism jobs was equally devastating as 62 million jobs were lost in the tourism sector alone, threatening the lives and livelihoods of the affected employees. In 2021 the sector grew marginal by 4% as
compared to 2020 levels and fell way too far to recover to 2019 figures (UNWTO, 2022).

While the initial impact of the pandemic across the industry could have been uniform, recovery is expected to be staggered, fraught with challenges, and differentiated across different geographic regions (Hall et al., 2020; Dube et al., 2021a,b,c). The announcement and subsequent rollout of vaccines at the end of 2020 and the beginning of 2021 were expected to drive economic recovery, particularly the tourism industry, as most countries seem to have an open border approach to vaccinated individuals. Given the inadequacy of vaccines and economic inequity, developing countries were largely disadvantaged in terms of access to vaccines (Nhamo et al., 2021). The marginalization of developing countries in accessing vaccines and discriminatory tendencies resulted in unequal economic recovery trajectories. This situation was worsened by vaccine hesitancy (Gursoy et al., 2021). Vaccine hesitancy is rooted and evident in developing continents such as Africa and other emerging economies (Adepoju, 2021).

In as much as the tourism sector acknowledges that the recovery of the tourism industry will be anchored on access to vaccines, which will result in issuance and usage of vaccine passports (Helble et al., 2021; Suess et al., 2022), there has been very little written on how inequity in vaccine access will affect the developing world and the global tourism market. A study by Musavengane et al. (2020) raised fears that inequitable access to the vaccine was likely to hurt the tourism recovery industry in developing countries. Given the severe implications of vaccine apartheid and hesitancy, this study seeks to examine and discuss some of the potential implications and complications of this sad reality on the prospects for tourism recovery, particularly for the developing world. This will be done by taking a global view to track tourism recovery in countries that have made significant strides in vaccination and those still battling to achieve high vaccination rates. The key question to this research is How does vaccination-induced recovery look like for various global tourism markets? What is the impact of vaccination-induced tourism recovery in various tourism regions?

2. Literature survey

The year 2020 was one of the worst years in tourism and global economic history due to the adverse impacts of COVID-19. According to Gössling et al. (2020), the absence of medical capacity and vaccines to deal with the coronavirus had a devastating impact on the tourism and hospitality industry (Foo et al., 2021; Jaipuria et al., 2021; Skare et al., 2021). The persistent border closures proved disruptive to the normal operations within the tourism industry due to persistent lockdowns and created uncertainties (Goh, 2021). For the first wave, the impacts of lockdown were almost uniform worldwide as everyone had to rely on non-pharmaceutical interventions such as social distancing and physical distancing (Lingam and Suresh Sapkal, 2020; Tabernero et al., 2020). Such measures proved temporary, unreliable, and largely ineffective as infections continued to rise and fall, producing several waves, which created a spiral of economic losses due to persistent reopening and lockdowns across the world (McCarter, 2020). The pandemic was a major blow to the national (Wang et al., 2021) and global economy (Maital and Barzani, 2020). The tourism industry was one of the hardest hit sectors by this health crisis (Maqsood et al., 2021a,b, Abbas et al., 2021). All the subsectors, sectors, and support services for the entire tourism value chain were adversely affected by the pandemic, which resulted in the loss of jobs, lives, and livelihoods. Some of the tourism sectors and subsectors that were adversely affected by COVID-19 includes the sports tourism industry (Drewes et al., 2021; Alam and Abdurrahmeen, 2021); restaurant industry (Dube et al., 2021a, b,c; Kim et al., 2021; Song et al., 2021); aviation industry (Liu et al., 2021; Dvece et al., 2022); car rental and airports industry to mention but a few (Wang et al., 2022; Zhang et al., 2022). The scourage of the COVID-19 pandemic did not spare tourists destinations that are highly dependent on tourism revenue for conservation either, as they were left battling to look for conservation financing elsewhere (Hambira et al., 2021; Bates et al., 2021; Gibbons et al., 2021).

In many respects, the COVID-19 pandemic complicated business operations within the tourism industry due to persistent lockdowns and opening up of borders following the COVID-19 pandemic wave (Baum and Hai, 2020; Günay et al., 2020). Ever since the advent of the COVID-19 pandemic, it has emerged as a significant factor influencing travel behavior and trends across the world (Gibbs et al., 2020; Hiselius and Arnfalk, 2021; Bae et al., 2022). The pandemic adversely impacted people’s psychological and mental conditions (Abbas, 2020; Maqsood et al., 2021a,b), which affected travel behavior and patterns. Many business and leisure travelers were forced to revisit their travel plans to match the disease pattern (infection rates) (Borkowski et al., 2021; Chan et al., 2021). Awad-Núñez et al. (2021) noted that in as much as some travelers were not as eager to travel post the initial lockdown due to fear of the disease, the adoption of healthy and safety protocols such as sanitization resulted in greater confidence and utilization of public transport.

The pandemic fostered fear, anxiety, and uncertainty amongst travelers, promoting travel hesitancy (Luo and Lam, 2020; Zheng et al., 2021). This can be attributed to the COVID-19 pandemic ushered a wave of health and safety concerns during travel and at destinations (Zhu and Deng, 2020; Sukaatmadja et al., 2022; Dedegolu et al., 2022). Tourism was seen as one of the critical drivers of the spread of COVID-19 (Qiu et al., 2020). Even with the adoption of healthy and safety protocols at the accommodation, transport food outlets, and destinations to address health and safety protocols, several tourists were not as eager to travel (Abdullah et al., 2021).

Fear is likely to continue for some time, particularly when and where the COVID-19 infection figures are high, which could inhibit travel to some destinations. Some academics, however, feel that the presence of fear in the tourism industry could trigger coping strategies that can assist in building psychological resilience, resulting in the adoption of cautious travel behavior (Zheng et al., 2021). Evidence has shown that a decline in COVID-19 infections is matched by increased tourism activity, with tourism business performance closely linked to infection rates at a destination (Dube et al., 2021a,b,c). Li et al. (2020) argue that the pandemic will have a long-lasting adverse impact on destination image, and this impact will differ from a demographic, spatial, and temporal perspective.

The advent of the COVID-19 vaccines at the end of 2020 and the subsequent approval for emergency use in January offered hope for a vaccine driven recovery. However, preliminary longitudinal studies point to evidence of hesitancy amongst a significant number of hospitality consumers to go and dine out (Gursoy and Chi, 2021). Various recovery trajectories have been offered regarding how different countries can quickly recover from the pandemic in vaccination-induced recovery, with some countries expected to recover as early as 2022 (Ruiz Estrada, 2021). Historically the advent of vaccines predicated significant human and economic development (Plotkin and Plotkin, 2011). Gursoy et al. (2021) pointed out that since herd immunity is central to achieving and ensuring sustainable economic recovery, vaccine hesitancy by religious, nationality and social groupings worldwide could hamper regional and national economic recovery. Six months into the emergency vaccine rollout, a significant number of people in some parts of the world had returned to some modicum of normalcy. Therefore, it is imperative to take stock of the recovery prospects for the tourism industry. To effectively do this, the study looks at key tourism indicators such as aviation and hotel performance over the 1st half-year and 3rd quarter of 2021.

3. Research methodological approach

Given the scope of the study that requires data from various sources, a mixed method approach was adopted in data acquisition and analysis. A mixed method research design was utilized where qualitative and
quantitative research data was harnessed to adequately answer the set-out research questions. Adopting a mixed method approach in such studies is inevitable, as advanced by Malina et al. (2011), who praised the approach for its capacity to respond to various data needs. The mixed method approach in tourism studies is widely accepted and supported by various scholars (McGehee et al., 2013; Wen and Meng, 2021).

The study utilizes multiple authoritative data sources from the tourism industry to answer the research questions. Chief amongst the data sources is archival data generated from travel websites responsible for booking and travel search data generated from online activity gathered from platforms such as Google Mobility and Destination Insights as we tap into Big Data. The study analyzed data for the period between January 2020 and August 2021. Big Data is gaining currency and usage in the tourism industry, where businesses use it to track customer online activity, which allows for informed businesses to be made, such as customization of tourism products (Centobelli and Ndou, 2019). Various tourism operations generate various kinds of statistics and data that can be analyzed and utilized to generate meaning and gain insights into the past and future tourism trends (Volo, 2019). Li et al. (2018) pointed out that tourism generates data that can be used in research from various user transactions. Amongst other sources, data is generated from tourists and tourism companies. This data can be generated from devices and operations. Such data can be easily populated from online transactional activities. It is the same data that has been leveraged in the quest for smart tourism (Xiang et al., 2017).

In that light, the researchers used data generated from the travel and hospitality sector to answer the research questions. In addition, secondary data from surveys were also used to augment and respond to research questions. The Search, Appraisal, Synthesis, and Analysis (SALSA) framework was the principal approach in analyzing the material used. A critical review of literature such as archival data, industry reports, and other relevant material was utilized in the prescribed manner Grant and Booth (2009). To gain insights on COVID-19 infections, vaccination rates, administration, and the opening of borders, the research relied on the archives of Our World in Data. The site has been consolidating various data of global importance and archiving it. This open data source has the most extensive archival data collection on climate, population, water access, pollution, and other vital data. The database can provide both raw and processed data, allowing various users to tap into it.

Some of the data were collected from the STR archival database, which comprises sample data from 68 000 hotels and 9.1 million rooms worldwide (STR, 2021a). The STR database is also used by UNWTO to track tourism industry recovery and considers a credible source. In order to determine and track travel demand data generated from Google Destination Insights. The Data is generated from monitoring online activities of accommodation and tourism transport companies such as airline bookings generated across the world using the Google Platform and search algorithm to monitor people movement globally. This is a powerful platform that can be used to understand the fast and ever-evolving travel patterns and demand for decision making.

A thematic, conceptual, and chronological analysis was utilized. The approach has been used in similar tourism studies on the tourism and pandemic issue (Singh et al., 2021). In order to analyze data, each research question’s data were grouped through a systematic process that grouped data for the period of study, either as qualitative and quantitative data. The qualitative data obtained from the reports and website went through an initial data screening process. This was done to identify data that spoke to the needs of the research questions. Detailed content analysis followed an initial prescreening of data aimed at identifying relevant data sources to identify the data that specifically addressed each research question. In order to analyze quantitative data, raw data collected from various platforms was processed using Microsoft Excel ToolPak. Graphs and images were produced using this tool as a plugin in Microsoft Excel.

4. Results

The study found that as of January 17, 2022, slightly more than a quarter (60.1%) of the global population had received some form of vaccination across the world. Vaccination rates remained very low in developing countries, with a measly 9.6% having received at least one dose as of Mid-January 2022. However, access to vaccines has not been equitable across the world (Fig. 1), with the lowest vaccinations rates in developing countries (low-income countries). This development is worrying as it threatens recovery prospects and returns to normalcy globally. The development confirms fears and assertions by Nhamo et al. (2021) and Wang et al. (2020) of vaccination access challenges to the detriment of the developing world.

Fig. 2 shows that the upper middle income and high-income countries are leading in the number of vaccinated individuals. The number of doses administered in low-income countries remains worryingly very small. Countries with better vaccination rates stand a better chance of returning to business and allowing for social and economic activities to occur without the need for harsh lockdowns. Vaccines effectively reduce severe illness and deaths (Paltiel et al., 2021).

The countries that have managed to achieve herd immunity stand a better chance of restoring their economies with some level of normality. As shown in Figs. 1 and 2, only a few countries, particularly those in the Global North, are near achieving herd immunity. Poor and developing countries are battling to roll out their vaccination programs due to uneven distribution successfully and what can be considered hoarding of vaccines by the developed world (Bolcato et al., 2021; Black et al., 2021; Tatar et al., 2021). The advance in some countries in achieving herd immunity can perpetuate already existing global economic inequality. The developing countries remain under siege from the pandemic and often rely on hard lockdowns to control the pandemic, which is highly disruptive to socio-economic lives.

On the other hand, most mainly developed relaxed people’s movement (particularly domestic travel), triggering economic and social activities. Such a scenario is unsustainable for industries such as the travel and tourism industry, which relies on a sophisticated global network with supply and destination nodes that must be operational. The bulk of the unvaccinated population also threatens emerging variants that might be immune to existing vaccines on the market. Such a development could further slow the recovery process and disrupt economic and tourism prospects. It is very difficult to imagine how recovery can occur when the bulk of the population is unvaccinated and unsafe.

As of July 2021, as the developing world was battling the COVID-19 third wave resurgence (Fig. 3), which resulted in severe lockdowns, parts of Europe and North America were opening up a business, and social life a considerable portion of their populations had been vaccinated. The opening up of the global economy was predicated by a robot system that categorizes the world according to risk to determine who was allowed and who was not allowed into both European and American territories. The list was by and large exclusionary of developing countries with residents of Europe and America being discouraged or issues with do not travel to notices. This was a curious move given that infection rates in the developing world have mainly remained low since the pandemic outbreak but receive harsh treatment from the developed world.

The opening up of the economy in the Global North also meant that this region could redirect resources towards the economic reconstruction process. On the other hand, however, the developing world continued to incur mitigation expenditure on health and social relief expenditure in developing countries due to the impacts of COVID-19 from morbidity, and consequent health costs were likely to worsen their economic development prospects and entrench poverty and inequality, which could reverse gains made under the Sustainable Development Goals (SDGs) (Kolawole, 2021).

Given that the global economy is opening at different stages, this is equally likely to create chaos in the global economic market due to inequalities in recovery and recovery rates. Given that international factors...
rather than local factors buoy the bulk of the tourism industry, it is likely to be the last economic sector to fully recover as destinations are opening and closing at different times in response to the COVID-19 infection rates. This will affect the market supply and demand for the tourism sector. The following section shows how vaccination efforts have affected the tourism and tourism business in various world regions and demonstrate some trends emerging due to vaccination apartheid. A discussion of the potential consequences will be undertaken.

The study found that as of July 23, 2021, the world had moved significantly to reopen up travel space, with only 23% of the world having total restrictive measures in place. At least close to half the world had removed restrictive travel measures (Fig. 4). From the scenario analysis, it is clear that Africa had the least restrictions followed by the Americas. This could be ascribed to general low infection rates observed

Fig. 1. % number of vaccinated populations by country.
Source.

Fig. 2. COVID-19 vaccine doses administered by country income group.

Fig. 3. Weekly confirmed COVID-19 cases per million people across continents (7 days rolling average)
Source: Graph Adapted from Our World in Data.
in many parts of Africa and the desire to attract the international tourism clientele, which forms the mainstay of the tourism economy. Most of the restrictions imposed in July were largely to protect the populace from the resurgence of wave 3 of COVID-19, which was being propelled by the highly infectious Delta strain. This was particularly true for those countries that the vast of their populace unvaccinated, as reported in Figs. 1 and 2. Some countries in the Global North, such as the USA and the United Kingdom, were easing travel restrictions and extending civil liberties to citizens.

4.1. Vaccine and travel demand recovery

Evidence from Google Analytics based on market queries shows that travel demand has been rising, which could be early signs of recovery that started around February (Fig. 5a). However, this travel demand has been primarily buoyed by domestic travel, which outperformed international travel demand (Fig. 5b). These findings confirm earlier assertions and suggestions that domestic tourism was likely to provide initial impetus for recovery (Woyo, 2021; Volgger et al., 2021; Dube, 2021). This has dire consequences for countries and regions reliant on the international tourism market, mainly developing countries. Tourism in developing countries is likely to remain depressed until such a time the issues of health and security risk triggered by COVID-19 are addressed through a robust global vaccination program or treatment for COVID-19 is found. The economic meltdown triggered by the COVID-19 pandemic will likely reduce disposable income for the middle and upper income, who are the potential domestic tourism market. Of importance

Fig. 4. Country Entry Restrictions across the world
Source: Author Data supplied by UNWTO.

Fig. 5. a and b: Global Travel Demand during COVID-19 (January 2020 to July 23, 2021)
Source: Author data from Google Destination Insights
Source: ICAO (2021).
is the need to note that the emergence of the domestic market also has implications for various tourism sectors where the domestic travel and hospitality market had to tailor-make the tourism product to cater for the by and large exclusively domestic tourism market. It is also not clear how the tendency to seek domestic destinations will be a short term thing or an evolving trend that will be sustained into the future.

The transport sector, particularly the aviation industry’s ever reliance on the domestic market, had implications on the business operations of airlines across the world. The main airlines relooked at the type of aircraft they used and their pricing system to ensure business resilience. An analysis of the USA and the Euro regions shows a large deployment of single isle small body aircraft with a rush towards the most fuel-efficient aircraft to ensure sustainability from a financial position. Smaller aircraft were meant to ensure operational and financial efficiency as the number of travelers declined at first (Table 1). Fuel-efficient aircraft were deployed to ensure financial efficiency and environmental efficiency. Evidence from Airbus and Boeing order books indicate that in as much as there were some order cancellations, there was equally a huge investment and purchasing of new aircraft in the 2nd quarter of 2021, with most airlines purchasing the most fuel aircraft such as the neo and max aircraft from Airbus and Boeing respectively (Forecast International, 2021). These two families of aircraft are touted as some of the most fuel-efficient and carbon-friendly aircraft on the market (Dube and Nhamo, 2020). Another aircraft manufacturer of largely small to medium aircraft also witnessed an increase of about 12% in its orders and almost recovering to pre-pandemic levels (Aviationline, 2021), a reflection of the aviation tourism market rebound with the aviation tourism most orders coming from European and American market.

Given the complexities in the Schengen and the USA, one of the busiest city-pair regions, most activities were restricted to domestic and regional travel in terms of recovery. China and the USA were the first aviation markets to witness recovery. Evidence from ICAO (2021) shows that domestic traffic demand surpassed the 2019 level in China soon after the Chinese New Year of 2021 with minor fluctuations through to July 21, 2021 (ICAO, 2021). In the USA, domestic travel demand had bounced and operated down 17% to 2019 levels while international flights operated down 37% from the preacademic levels on July 23, 2021 (Airlines for America, 2021) in Europe with data from EUROCONTROL (2021) shows that there was also some significant recovery with seven days moving traffic improving from around –62% on January 1, 2021 to a high of –35% on July 19, 2021 compared to the 2019 levels as many city pairs open up. This was due to gains made in the vaccination program.

It emerges from this study that the industry will continue to grow and recover and is supported by current vaccination programs that are underway globally. The study argues that unless the pandemic drastically mutates and produces sophisticated variants, tourism will continue its recovery process aided by the increased rollout of the vaccinations worldwide. This growth is likely to be slow in some regions and fast in other regions. Nonetheless, this is likely going to be a long road as most of the world remains unvaccinated, which risks exposure to the ever-increasing mutations of the virus, which can quickly spread and scuttle the recovery process.

Table 1
USA aircraft Deployment as of end of June 2021.

| Aircraft Type | 12/31/2019 | 12/31/2020 | 06/30/2021 |
|---------------|------------|------------|------------|
| Single Isle   | 3475       | 2847       | 3268       |
| Twin Isle     | 495        | 307        | 370        |
| Regional      | 1810       | 1517       | 1604       |

Source: Author.

4.2. Hospitality tourism vaccine-induced tourism recovery

An analysis of the hotel sector shows that the sector in all tourism regions is on a path to recovery across the world, although it is clear that this recovery is not uniform across the world’s various tourism regions (Fig. 6). Lagging is the African region whose occupancy, in most cases, is on average subdued at around 39%, and the best performing region is the American region which is outperforming the global average of 53%. The American region is one of the regions that had been at the forefront of the COVID-19 vaccination program. On the other hand, the African tourism market has been seeing a significant increase in COVID-19 daily infections since the beginning of winter, which starts around May in the southern hemisphere, leading to increased travel restrictive measures in Southern Africa, which could explain the stunted recovery in the hospitality sector of the tourism industry. This happened against vaccination rollout challenges worsened by political instability and poor governance and leadership in many states and nations. The poor performance in Europe can be attributed to the chaotic visa regime system in the Schengen region, which saw conflicting media releases at various episodes throughout the year 2021. The performance of the American tourism market can be attributed to two principal factors: a robust domestic tourism market buoyed by comparison successful COVID-19 vaccination rollout program, which allowed people to travel across the world and in the region.

At the early start, the successive rollout of the COVID-19 vaccine gave the American hotel industry, particularly the USA industry, a head start in the recovery process. However, data from the STR is quite telling that the USA travel market has outpaced even the regional performance. The occupancy rate for the USA closed in June at an average occupancy rate of 66% before climbing to 71% on July 17, 2021. It is worth noting that this was the highest occupancy week since the Columbus Holiday week of October 2019 (STR, 2021b). The reports note that most travelers are leisure travelers, with corporate travelers still very low, with the bulk of the market dominated by the leisure market. Group bookings are also reportedly low, with a dotted group booking around holidays and weekends. Most travelers were concentrated in leisure resorts with significant bookings over weekends.

Europe, which had also seen a number of countries with good vaccination rollouts, has had varying fortunes due to COVID-19, with some countries witnessing a more robust recovery than others amidst acrimony within the Schengen region on how to best deal with the issue of vaccines. The region was battling on which vaccines to allow and from which countries they could allow or block in the region. The region finally decided that it was only going to allow visitors who had been vaccinated by the vaccines approved by the European Medicines Agency (EMA), namely; Pfizer, Moderna, Astra Zeneca, and Janssen (Shengenvisainfo, 2021). A waiver was extended to the Chinese, including Hong Kong and Macao, on the condition of reciprocity. The region allowed a set of countries to be allowed into the Schengen region on condition they were vaccinated or show proof verifying at least one vaccination, recovery, negative test certificate (Table 2). Countries were also allowed to add their own countries to the travel list known as third countries. The chaotic implementation rollout of the EU Digital COVID Certificate (EU DCC) and subsequent rollout of the travel list negatively impacted many countries in the EU. The chaos can be directly and squarely blamed on vaccination apartheid with drastic unintended impacts on international tourism. Under this system, many Sub-Saharan African countries, Asia and South America, were largely barred from entering the EU. The EU citizens were also discouraged by several measures from visiting high-risk countries due to poor vaccination rollout or high COVID-19 infection rates. Consequently, the recovery was going to be varied across the countries.

However, under the regime, most countries from the Southern African Development Community (SADC) region were banned from allowing easy access into the European Union (EU) and Schengen region. Also targeted in this exclusion were British territories and, in the beginning,
the United Kingdom itself benefitted from being part of the greater EU. The USA was also stigmatized because of its high infection and mortality rates in 2020, although some countries went on to make bilateral concessions based on bilateral interests. Another country that was targeted was India, as it was the source of the highly contagious variant of COVID-19, the Delta variant. The Delta variant was at the epicenter of the 3rd wave that rocked the southern African region between June and July 2021.

Such a move cast the banned regions in a bad light. Regardless of not having restrictions on international travel, the regions fell in terms of global tourism demand (Fig. 7a and b). Data from Google Destination Insights on travel demand countries and regions that have achieved some success in their vaccination program are realizing the highest travel demands if one compares Figs. 3, Fig. 6a and 6b. The countries in Southern Europe, Western Asia, and North America are leading the pack in terms of tourism demand globally. This has left countries in Southern Africa, Central Asia, Middle Africa, Eastern Asia, South America, and other developing worlds (7a) at the back foot of tourism demand, resulting in delayed recovery for the region. This has an impact on increasing cash burn within the sector and raising demand for liquidity support and cash containment strategies. Countries such as the USA, Spain, Mexico, and the United Arab Emirates because of the successful rollout of vaccination of their adult population, which gave some assurance and measure of safety to visitors, helping boost confidence and travel demand to the area helping with tourism prospects.

Besides Europe, the USA issued red alert travels to other countries within southern Africa and other areas, considered risky. A ban on travel was issued to countries with high infections and weak health capacity to deal with the threat posed by the COVID-19 pandemic (Travel State, 2021). The situation forced countries to look inwards and rely on domestic travel as part of the tourism recovery journey, given the situation’s fragility. Both the Schengen Region and

**Table 2**

Evolution of list of non-Schengen Region countries allowed into the region.

| List of May 6, 2021 | List of June 3, 2021 | List of June 18, 2021 | List of 1 July, 2021 |
|--------------------|--------------------|---------------------|---------------------|
| Australia          | Australia          | Albania             | Albania             |
| Israel             | Israel             | Armenia             | Armenia             |
| New Zealand        | Japan              | Algeria             | Algeria             |
| Rwanda             | New Zealand        | Chinese regions of | Chinese regions of |
| Singapore          | Rwanda             | China               | China               |
| South Korea        | Singapore          | Australia           | Australia           |
| Thailand           | South Korea        | Azerbaijan          | Azerbaijan          |
| China, including   | Thailand           | Bosnia and Herzegovina | Bosnia and Herzegovina |
| Hong Kong and      | China, including   | Herzegovina         | Herzegovina         |
| Macao (subject to  | Hong Kong and      | Japan               | Japan               |
| confirmation of    | Macao (subject to  | Brunei              | Brunei              |
| reciprocity)       | confirmation of    | Japan               | Japan               |
|                    | reciprocity)       | Russia              | Russia              |
|                    |                    | Lebanon             | Lebanon             |
|                    |                    | Montenegro          | Montenegro          |
|                    |                    | New Zealand         | New Zealand         |
|                    |                    | Qatar               | Qatar               |
|                    |                    | Korea               | Korea               |
|                    |                    | United States of    | United States of    |
|                    |                    | America             | America             |

Source: Author Data from European Union.
Fig. 7. Leading demand for global Air and Accommodation Demand
Source: Author Data from Destination Insights with Google.

Fig. 8. Top Globally Barriers to travel October 2020 to May 2021
Source: YouGov (2021:8).
the USA adopted traffic light system (robot) system was highly variable as it depended on risk perception and infection rates. This had a consequence of altering the booking pattern and behavior, something that we had witnessed during the pandemic where tourists made bookings closer to travel to try and deal with abrupt changes and uncertainties posed by the disease as health and safety was a primary concern to travelers since March 2020.

A survey conducted by (YouGov, 2021) which surveyed 185 000 people from 25 global markets, indicated that the major impediments to traveling in the global tourism market were primarily health and safety risks, followed by travel restrictions which are closely tied to the threat to the health and safety threats caused by COVID-19 (Fig. 8). Of note, however, is the fact that there seems to be an increase in health confidence amongst the travelers. This could be attributed to the improved rollout of vaccines globally. An improvement in safety and travel restrictions concerns. Again, as seen in Fig. 4, there has been reduced stringency globally as some tourism markets are opening up and starting with the tourism recovery process. One critical factor emerging is the cost of travel which seems to be persisting. Catering for various markets is critical for the tourism sector to ensure inclusivity during the recovery period.

5. Discussions

In as much as the world tourism industry pinned its hope on the discovery of vaccines (Kaewkitipong et al., 2021) or identification of treatment in the second year of the pandemic while it brought and delivered on the hope of a vaccine, the return to tourism normality proved to be fraught with numerous challenges as also noted by McCartney et al. (2021). Given that the pandemic had a global footprint, it was challenging at first to ensure that everyone global citizen had access to the vaccine due to supply capacity challenges. Consequently, the developed countries were the first to access the vaccine, adversely affecting developing countries who had to endure the persistent lockdowns which disrupted tourism operations as equally noted by Yu et al. (2020) and Dube (2021).

While there was an anticipation that vaccination rollout, was going to result in the opening up of the service industry and bring to an end the lockdowns with travellers being issued with COVID-19 vaccination certificates, which could act as some form of travel passports (Pavli and Maltezou, 2021) this study reveals that the situation proved to be much more complex than expected. Vaccinated individuals did not find as much relief as they anticipated as countries that had some levels of success in vaccine rollout still imposed some form of travel embargo to and from their countries against other countries, particularly the developed countries. Lack of global solidarity and poor coordination was a significant impediment to the successful reopening of the tourism and travel industry as it hampered travel confidence.

There seems to have been a well-calculated intention to ban the developed country, which ended up as victims of the border restrictions that adversely affected international tourism and tourism industries in the developing countries. The constant travel warnings issued by Europe and the USA and movement restrictions by China in 2021 were significant impediments to tourism recovery as the dominant international tourism supplier to the tourism market. Even for fully vaccinated individuals, there was still demand for tourists to produce a negative COVID-19 certificate also complicated the logistics and costs of travel which discouraged many would be visitors from travel. This produced uncertainties and a financial risk to international travel as also observed by Rahman et al. (2021) and in a way discouraged travel and tapping by tourists from the benefits of being vaccinated. The threat of quarantine in destinations and returning to home countries was another major obstacle to vaccine induced tourism recovery.

Recovery efforts were also hampered by the continuous threat of the mutating variations discovered mostly from developing countries such as India, South Africa, and Brazil, which had the vast population unvaccinated. The knee jack reaction to variant discovery was banning travellers from the country where the variant was discovered to isolate these countries with returning visitors subjected to quarantine even with a double negative COVID-19 certificate on departure and arrival for the fully vaccinated individual, which discouraged long haul and international tourism. With poor vaccination rates, rising inflation, and poor purchasing power, the developing countries were forced to rely on the domestic tourism market, which undermined the recovery process and frustrated the tourism businesses across the entire value chain particularly those in developing countries as vaccines tend to have benefitted those countries and regions with strong domestic and regional markets. One is tempted to feel that the developing countries found themselves at the receiving end of vaccine inequity diplomacy and helpless in many circumstances as they tailed behind in the recovery process. Better management of the pandemic, particularly in the advent of vaccines, could have proved much more beneficial to the tourism sector than it did.

6. Conclusion and recommendations

It is clear from the study that the pandemic had a significant impact on the travel and hospitality industry and altered and has disrupted tourism demand forces across the world. While the impact of the COVID-19 pandemic seems to have been uniform across the world, recovery at the backdrop of the vaccine is likely to be varied across the world. The developed countries that benefitted from the hoarding of vaccines at the onset of vaccine rollout seem to benefit from the initial vaccine-induced global tourism recovery. The reasonably successful rollout of the vaccines was a huge economic investment that is beneficial to many states that achieved some measure of success in this regard. The inequity in vaccine rollout is resulting in differentiated global tourism and economic recovery.

While the developing world is still battling the impacts of the pandemic, the unintended consequences of closing and opening on the tourism economy are likely to see to company failures in many developing countries where tourism financial support is largely non-existent which can push back gains made by the sector in the achievement of Sustainable Development Goals. This inequity in recovery is a threat to lives and livelihoods. What has been clear from this study is that international tourism is still far from full recovery given challenges still being experienced in vaccination diplomacy.

There is a need for recovery to be sustainable, and to achieve this, there was a need to ensure that everyone from both developed and developing regions has access to vaccines. The threat posed by the unvaccinated populace is not limited to local economies and regions but poses a threat to the global tourism value chain as new mutations could scuttle made under the current vaccination program. There is also a need to deal effectively deal with the tensions and acrimony over allowing and not allowing people who have or have not been vaccinated by this or the other vaccine. There is an urgent need to responsibly restart the global tourism industry by allowing all vaccinated individuals to travel unhindered to allow easy people flow.

There is also a need to provide a single approach to the best standard of practice which is universally shared to avoid further frustration of tourists and the tourism industry in a manner that reduces the current inconsistencies in the global tourism market, which talks to issues around required documentation, quarantine measures, and other unnecessary diplomatic spats. A combination of pharmaceutical and non-pharmaceutical interventions is adequate to allow the world to move away from some of the harsh lockdowns and ever-changing travel measures we have seen. In this regard, lessons can be learned from South Africa, which has relaxed travel restrictions amid an upsurge in infections from the Omicron variant of COVID-19 but still managed to move out of the fourth wave successfully, with borders fully open to international travellers between 2021 and 2022 using a combination of pharmaceutical and non-pharmaceutical measures.
Authorship statement

I Prof Kaitano Dube to attest that all persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in Physics and Chemistry of the Earth.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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