What means of transport did Italians choose during the pandemic? A literature review

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Abstract

The ongoing health emergency is reshaping the environmental, social and economic context. It is therefore necessary to define a new overall mobility ecosystem. The freeze and restrictions imposed since March 2020 have indeed strongly conditioned modal choices and travel frequencies. Italy was among the first countries to suffer dramatic consequences in Europe and to have reported several critical issues in the transport sector, especially for local public transport (PT). In addition, several survey-based studies have mapped the demand for regional mobility in light of the major changes taking place in the world of work, with the introduction of smart working and the consequent reduction in travel. The change in living and commuting habits has also been due to a strong psychosocial change and especially due to the stress and anxiety that people have felt while moving. All this has led to an increase in the choice of the private vehicle for major daily travel as it is connected to a perception of greater safety and lower risk of infection. Therefore, the present work stands as a review of the literature related to different modal choices and travel trends in the Italian context, focusing on the factors that have changed choices in transportation and mobility. The review was conducted using keyword strings in Scopus and Transportation Research Integrated Database (TRID). The findings underscore the need to implement a new mobility to maintain a strong relationship between service operators and customers. The development and success of individual models will depend on the ability of operators to embrace the new needs of the community and on how well institutions are able to rethink the entire mobility ecosystem.

Keywords: Transport, Mobility choices, COVID-19, Review.

1. Introduction

The most relevant and innovative aspect of the sustainability paradigm focuses on integrating and creating the right balance between the different environmental, economic and social dimensions.

The complexity of such an analysis demonstrates that an approach proposed in both economic and social studies, which places the recognised environmental, social and economic components alongside the institutional dimension (Flor et al., 2022), can be shared.

In the city, sustainable mobility must ensure that people can freely move, access, communicate, trade and establish relationships without jeopardising the potential resources of future generations.

This can be realised through the planning of a sustainable transport system (infrastructure, means and services) of people and goods, complemented by a citizen-centred mobility demand management. Such management has to be defined according to a transport hierarchy that prioritises more space, energy and other cost-efficient modes of transport over individual car use, particularly in congested corridors. On a hierarchical level, it is useful to put active mobility, as walking and cycling, in the first place, followed by collective and shared mobility, as well as individual motorised mobility with less environmental impact (Fior et al., 2022).

In fact, the development of soft mobility, such as walking or cycling, allows an increase in health and respect for the environment, thus generating an amelioration in psycho-physical well-being. For years now, urban planning has taken into consideration the correlation between the psycho-physical well-being of citizens and the availability of public spaces, both to increase sociality and slow mobility.

For decades, the mobility of goods and people in large urban areas has become a serious problem for public administrations, especially people management.

It is not easy to analyse people's choices and at the same time to understand how to limit congestion on the road network, which contributes to the constant environmental degradation and the overall worsening of life quality.

At present, the transport system characterised by too many cars generates negative environmental and social externalities, which results in an economic loss to the community. Here, demand plays a key role, since the individual citizen has a private, and not a social, perception of transport costs and tends to underestimate their collective weight.

The deployment of COVID-19 has changed the relationship between citizens and urban space. Public space has been restricted and interdicted, confining citizens within their private spaces, making citizens' psychophysical well-being depend solely on the quality of their domestic space (Downey et al., 2021).

Several restrictions imposed by local governments to limit contagions have increased the time spent at homes such as teleworking, online education and the lower propensity of users to travel by public transport (Campisi et al., 2022a).

Most studies show a worsening of psychological conditions, especially among adolescents. School closures and measures restricting social relationships have been pursued for some time, heightening this critical issue.

It is emphasised that further studies are needed on the long-term effect of restrictive measures for prolonged periods, as well as studies on overall assessment of the balance between expected benefits in terms of reducing infection and negative effects on the psychological well-being of young people (Cunning and Hodes, 2022).

All population groups have made changes in lifestyles, increasing sedentariness in some cases and, in some others, increasing the need to individual outdoor sport activities (Nikiforiadis et al., 2022). This condition has also caused problems for human health with an increase in obesity and musculoskeletal problems (Cava et al., 2021).

The pandemic represents a moment of reflection and research for all those disciplines regarding the quality of life of citizens.

According to Murgante et al. (2020) Italy was the first western country to be strongly affected by the COVID-19 pandemic. This led to a sort of collective trauma, followed by a strengthening of social identities, primarily that of the nation and its institutions, causing both negative and positive psychological responses.

Several studies based on interviews and questionnaire administrations have underlined the effects of quarantine caused by the COVID-19 outbreak, highlighting that women have significantly higher levels of anxiety than men (Campisi et al., 2022b). Young adults showed higher levels of psychological distress, as those with a history of previous chronic illness (Mazza et al., 2020).

In particular, there was post-traumatic growth, i.e. a subjective experience of positive changes, derived from a traumatic event, in five main psychological dimensions: relationships with others (e.g. greater acceptance of others), the perception of having new possibilities (e.g. the development of new life paths), a sense of personal strength (e.g. greater self-confidence), changes in spiritual life (e.g. greater faith) and appreciation of life (e.g. a change in priorities in life). In emergencies, such analysis can play a role in coping strategies involving a renewed sense of self and of one's social identities, which in turn foster a greater sense of trust and connection with others.

Various modes of transport have been explored by scientific research considering the concept and correlation between the environment, psychology and well-being of post-pandemic mobility.

Research conducted on flying practices in Norway highlighted how practices have changed as a result of travel restrictions due to the COVID-19 pandemic and the following implications for people's well-being. Research focusing on social practice and wellbeing, explored the possibility of flying less in post-pandemic times. Using survey data and regression analysis, studies focused on the infrastructure, norms, values, resources and skills associated with reduced pre-pandemic air travel. Walking, cycling and the use of public transport for short-distance travel were found to be correlated with a reduction in long-distance air travel. Finally, the interviews suggest that flying less for work could be a synergistic satisfaction, as it contributes to satisfying more than one human need, without hindering others. This has implications for the well-being of people who engage in intensive work-related flying practices, which is likely to increase if work-related travel is significantly reduced when the COVID-19 pandemic is over (Guillen-Royo, 2022).

The recommendations for a healthy, safe and sustainable public space were analysed by Cellucci and Di Sivo (2021). The study consisted of the following key points: Mitigating present and future pandemics; promoting public health and well-being. These recommendations were applied to the design experiment in a small Italian city, exploring the relationships between mental and physical well-being and public space in the design of an urban park.

Some studies focused on home-visit travel, considering the heterogeneity of the desire to travel and considering this factor in correlation with the interaction between the consumer's approach-avoidance motivational system and the traveller's personality.

Several travel motivations were considered, as such: home-to-work and home-to-school travel closely related to the commuting population and the spread of teleworking and DAD (Ceccato et al., 2021) and finally home-to-school travel.

The heterogeneity of the desire to travel and the interaction between the consumer's approach-avoidance motivational system and the traveller's personality (Wang & Xia, 2022) were considered.

All in all, the pandemic crisis may be an opportunity to re-evaluate the role and the importance of the provision of public spaces and improved infrastructures, also considering their distribution and effective accessibility. It therefore seems appropriate to analyse studies regarding mobility changes, in order to outline how the pandemic context has affected modal choice. This allows to draw some useful considerations for the future

1.1 Background

The spread of the COVID-19 virus marked a series of phases with varying rates of infection and death, with also varying rates of travel and modal choices.

In agreement with Murgante et al. (2020) and Di Napoli et al. (2021), Italy was the first Western country to be strongly affected by the COVID-19 pandemic but also by a kind of collective trauma, followed by a strengthening of social identities, primarily that of nation and its institutions. This led to both negative and positive psychological responses.

In particular, the comparison between the second quarter 2022 data and pre-COVID data (same period in 2019) in Italy reveals some highlighting aspects (see Table 1). First, the road traffic of heavy vehicles shows an acceleration of travel. Second, road and rail passenger traffic appear to be still lower than in 2019 (with values between -3% and -21%, respectively). In both cases, there is a clear improvement compared to the situation observed in the first quarter 2022.

In local public transport, passenger demand for mobility in the second quarter of 2022 is still about 8 percent lower (nearly 20 percent in regional rail alone) than in the same period in 2019, but also in this case there is a clear upturn compared to the first quarter of 2022 (+17 percentage points).

In the two-month period of April-May 2022, air passenger transport shows a 447 percent increase compared to the same period in 2021, although flows are still 13 percent lower than pre-pandemic flows. As for maritime traffic on ferries, there is a 7% increase in April-May 2022 compared to the pre-pandemic figure and an 84% increase compared to the same period in 2021. For cruises, traffic in the April-May 2022 period marks a 573% increase over the same two months of the previous year, although it still appears 59% lower than in 2019.

As for the main trends in mobility in cities emerging from the analysis of open source databases (https://www.google.com/covid19/mobility/), in the second quarter of 2022, staying near places of residence increased by 1% compared to the pre-pandemic period. Travel for essential purchases (grocery stores, markets, pharmacies and para-pharmacies) increased by 14%, while travel to other places (squares, parks, public gardens beaches, marinas) increased by 61%.

On the other hand, there was 6% of travel related to restaurants, bars, shopping malls, theme parks, museums, libraries and cinemas and 11% due to work.

The sharp increase in requests for directions by consulting online maps is also noteworthy. During the pandemic period, there was indeed an exponential rise, compared to before the pandemic, in citizens' use of smart devices (e.g., smartphone apps) to search for mobility services within mass transportation. This confirms the great technological "literacy" that has taken place in the past two years, an element that points to a definite development of Mobility as a Service (MaaS) tools.

Table 1: Summary of Mobility demand and service offering trends in Italy (https://www.mit.gov.it).

Transport mode	Type	Infrastructure/ Service	Trend % 2021-2019	Trend % 2022-2019
vehicle	light	ANAS	-6 %	-8%
		Highway	-9 %	-11%
	heavy	ANAS	+5%	+5%
		Highway	+10%	+3%
train	passengers	high speed train	-39%	-33%
		IC/ICN	-31%	-23%
	train supply and relative service	high speed train	-10%	-11%
		IC/ICN	-1%	-2%
public transport	bus passenger		-23%	-16%
air transport	air passenger		-35%	-30%
sea freight	ferry		+10%	+4%
	cruise		-74%	-79%

In agreement with Isfort's 'Audimob' observatory (www.isfort.it), it was estimated the daily mobility behaviour of citizens during the restriction regime (Prime Minister's Decree of 11 March 2020) due to the outbreak of the COVID-19 health emergency in the first 30 days of lockdown.

It was determined that, on an average day, the extended mobility rate (population leaving home) decreased from 90 per cent to 55 per cent, while overall travel decreased by 60 per cent and the passenger*km (sum of kilometres travelled by citizens) decreased by 90 per cent.

However, still a significant proportion of the population, i.e. more than half, did not stay at home, but instead made daily trips, though in some cases only of very short duration. In fact, there has been a certain substitution of longer, structured and systematic trips with very short journeys, on foot, in the neighbourhood (so-called 'proximity mobility').

The drop in demand for mobility was more pronounced in the central regions and especially in the elderly population groups; only 30 per cent of the over-65s left home on an average day. The overall drop in travel can be estimated at 80 per cent of the total.

The drop in demand for mobility among the young and very young, due to the total closure of schools, was also somewhat higher than in the central age groups. Looking at occupational status, there were some substantial differences in behaviour: pensioners stayed at home to a very large extent; students, housewives and the unemployed drastically reduced their trips and journeys. Yet, those with a job, in two out of three cases, made at least one daily trip, whether long or short, and regardless of whether the motivation for mobility was work-related. The average length of journeys was reduced

by more than a third, an obvious and predictable effect of the rule of 'proximity-only travel, with justified exceptions'; in the Centre and North-East, this shortening was more marked. Concerning the use of means of transport, the health emergency confinement has produced a modal repositioning, in the order of 5 percentage points of share, in favour of non-motorised mobility (walking in particular), to the detriment of collective mobility and intermodal mobility, the weight of which has more than halved in the month of lockdown. It is above all in the regions of the Centre that public transport and intermodality collapsed, while in the South they held up better (but the share of public transport is much lower here). On the other hand, the car and motorbike have maintained their relative positions with almost 60% of journeys served. The weight of the car in the modal split is increasing in the North-West and the Centre, where the presence of large metropolitan cities is stronger, while it is decreasing in the South and in the Islands.

1.2 Research Objectives

The specific objectives of the study are the following: (a) to identify the various discrete and continuous parameters that influence the behaviour of users as drivers and passengers as the reason for travel and the different modal choices change, (b) to evaluate through a literature analysis from 2020 to 2022 paying particular attention to the Italian context and the factors affecting the choice of means of transport.

2. Methodology

We performed research for articles in the literature via the two electronic bibliographic databases Scopus and Trid on 6th September 2022. Words used in the string were, for example, Ital*, Covid, Means of transport (e.g. motorcycle, scooter, e-scooter, bike, bus, car, pedestrian, public transport,…) and choice/demand. We also manually searched the bibliography of articles included in the review to make sure we had identified all articles. Two reviewers independently read the titles and abstracts of the selected articles to check whether they were relevant to the research through the free web and mobile app Rayyan (Ouzzani et al., 2016). Figure 1 shows the outline of the article selection process. We started with 125 papers from which 13 duplicates and 4 papers published before the pandemic (2009-2011) were removed. The titles and abstracts of the remaining 108 articles were then read and analysed. Included in this search were English-language studies that were conducted during and post-pandemic, but not previously initiated. Studies whose focus was on diseases in the experimental sample and how these were affected by the pandemic were excluded; this could be an interesting topic for future research.

Figure 1: Steps in the literature review and a progressive number of papers included.

2.2 Data Collection

The papers included in this literature review have been aggregated in the following paragraphs according to the type of transport considered (see Table 2).

These have been identified and classified considering:

- period of analysis (different pandemic phases: before COVID, lockdown, post-lockdown, phase II, phase III);
- type of user involved (worker, student, tourist, commuter);
- method of acquisition (interviews, surveys, indirect acquisition, literature comparison);
- different modal choices.

Table 2: Summary of paper included.

#	Authors, reference	Period of analysis	User involved	Method of acquisition	Different modal choices
1	(Basbas et al., 2021a)	Post-Lockdown, Phase II	Worker And Commuter	Survey	Public transport
2	(Basbas et al., 2021b)	Lockdown Phase II	Commuter	Survey	Public transport
3	(Caballini et al., 2021)	Lockdown Phase II	Various	Inductive loop sensor	Local mobility
4	(Campisi et al., 2021a)	Before and during the third phase	Worker and student	Survey	E-scooter users
5	(Campisi et al., 2021b)	Before COVID, Post-	Worker and student	Survey	Public transport

6	(Campisi et al., 2022a)	Lockdown, Phase II Before COVID, Post-Lockdown, Phase II	Various	Survey	Public Transport
7	(Campisi et al., 2022b)	Before COVID, Post-Lockdown, Phase II	Various	Survey	Pedestrian
8	(Campisi et al., 2022c)	Before and After pandemic (March 2020-January 2022)	Students	Survey	Public Transport
9	(Carrese et al., 2021)	Lockdown, Post-Lockdown	//	Different communication technologies	Various
10	(Cartenì et al., 2022)	Before and after	//	Floating Car Data	Car
11	(Ceccato et al., 2021)	Before, during and after the COVID-19 blockade	Students and employees at university	Survey	Local mobility
12	(Esposti et al., 2021)	Phase II	Student	Survey	Various
13	(Fistola et al., 2021)	Pandemia, Post-Pandemia	Student	Survey	E-scooter users
14	(Fistola et al., 2022)	Pandemia	Student	Survey	E-scooter users
15	(Moslem et al., 2020)	Before and during the COVID-19 pandemic	Various	Survey	Various
16	(Scorrano and Danielis, 2021)	Before and during the COVID-19 pandemic	Retired/unemployed, students, employed	Interview/Survey	Various
17	(Torrisi et al., 2021)	Before COVID, Lockdown	Various	Survey	Shared mobility

The following subsections briefly summarise the papers included in the review.

2.3 Micro-mobility

The pandemic, as mentioned several times, has reduced and limited travel within the country. Users have changed their habits, sometimes even preferring micro-mobility to private vehicles. A study by Campisi et al. (2021a) showed how there was a growing trend towards the use of e-scooters, even in the post-pandemic period (i.e. social distance, eco-friendly means of transport) and how the habits adopted during the pandemic remained valid afterwards.

In Fistola et al. (2021) and Fistola et al. (2022), questionnaires regarding micro-mobility were analysed, with a special focus on e-scooters, which were introduced in Italian cities mainly in the pandemic period. The study by Campisi et al. (2022b) focused instead on

people's emotions (anxiety, stress and fear) when walking short distances from the study areas, and how this influenced their travel habits.

2.4 Public Transport

Public transport has been restricted with the spread of the COVID-19 pandemic in Italy, resulting in a drop in demand, especially during the lockdown period (March-May 2020). The COVID-19 pandemic had an impact on users' travel choices, including their choice of means of transport.

The study by Basbas et al. (2021a) compiled the results of 700 online questionnaires of regular public transport users; their travel habits and opinions on government and public transport company initiatives were thus identified. The results yielded significant insights into the identification of critical challenges in severely restricted mobility, allowing to suggest valuable improvements both for authorities and public transport agencies.

Another study by Basbas et al. (2021b) highlighted instead data on the demand for public transport before and after the blockade period in Sicily. It also assessed, with a cluster analysis, the acceptance rates of national recommendations to prevent contagion and encourage PT use. The survey data were examined with descriptive and cluster analysis techniques. The results could be a concrete aid for the reactivation of PT.

The study by Campisi et al. (2021b) examined the characteristics of public transport demand during the various phases of the COVID-19 pandemic in Sicily. Through the administration of an online survey, it was possible to collect socio-demographic and psychological data to understand the propensity to use public transport. A series of inferential statistical tests were then applied to assess the correlation of psychological aspects (e.g. fear, anxiety and stress) with sociodemographic variables and modal choice habits (travel frequency). The results highlighted the psychological issues between population groups and their relative role in shaping public transport preferences.

In a review by Campisi et al. (2022c), university students were interviewed in order to investigate changes related to their choice of transport mode. It emerged that the pandemic had changed human behaviour in terms of mobility choice, with regard to both commuting and daily activities (e.g. physical activity, etc.).

In a further work by Campisi et al. (2022a), the investigation again confirmed previous findings: the decrease in services, capacity limitations and fear of infection led the population to drastically reduce the use of PT. All the results presented are certainly a useful basis for reflection in order to optimise the PT service in emergencies.

2.5 Local mobility

The study by Caballini et al. (2021) focuses on the city of Turin during and after the first lockdown, presenting local mobility trends. It provides overall indications for further transport policies, with the aim of advancing knowledge in this area to gain new mobility balances.

 Ceccato et al. (2021) developed factor analysis and binary logistic regression models to predict factors influencing the decision to travel for study or work in the 'new normal'. This was possible thanks to a survey investigating travel habits and risk perceptions before, during and after the COVID-19 blockade. The results were different for the two groups surveyed: students and university employees. The outcome may contribute to the creation of a resilient transport system and, in addition, to the reduction of both pollution and congestion.

2.6 Car

In the investigation by Cartenì et al. (2022), Floating Car Data (FCD) was used to estimate and compare car journeys before and during the pandemic. In the latter case, a significant reduction in extra-provincial car journeys was noted (between 23% and 42%) compared to intra-provincial car journeys, which instead increased (up to +5%).

2.7 Shared mobility

The research by Torrisi et al. (2021) provides an insight into the different choices of shared mobility before and after COVID-19. The findings embody promising aspects for future research to create tangible solutions for increasingly sustainable mobility.

2.8 Several types of mobility.

In the study by Carrese et al. (2021), the different modal choices of people in Rome from March to June 2020 were investigated. The authors focused on various modes of transport: walking, cycling, car and metro.

In the work by Esposti et al. (2021), around 500 questionnaires were analysed, from which it emerged that habits in terms of modal choice had changed. A decrease of the use of public transport and ridesharing was notice, as the population surveyed preferred to avoid contact with other people in transport during the pandemic.

The research by Scorrano and Danielis (2021) considered the choice of means of transport to access the centre of Trieste, before and during the pandemic. The results found were in line with those of the other studies, demonstrating that there was a negative impact on the use of the bus in favour of private mobility (both motorised and non-motorised).

Finally, in Moslem et al. (2020) research, a customised best-worst method (BWM) model was used to evaluate mobility choice alternatives. The survey collected opinions on different mobility choices in Palermo and Catania before and during the pandemic. This method can be used for future studies by both researchers and companies.

3. Discussion and Conclusion

This literature review investigated which means of transport Italians chose during the different phases of the pandemic and how mobility habits changed. The present review provided evidence for some significant aspects that should be considered not only by governmental bodies, but also by public transport agencies.

The preference for the use of the car at the expense of other means of transport is a phenomenon that has been fostered during the lockdown recovery. This is not to be underestimated, given the consequent negative repercussions on the environment and human health.

The implementation of policies and interventions aimed at encouraging the employment of more sustainable means of transport is of fundamental importance and cannot be separated from the analysis of the decision-making process that leads individuals to choose the car rather than alternative means.

A careful analysis of the literature relating to a national context must support the evolution of mobility management, i.e. the set of initiatives that each organisation, both public and private, puts in place to manage the mobility of its workers, with particular attention to systematic home-work-to-work journeys.

This attention is preparatory to the promotion of sustainable forms of mobility, from an environmental, economic and social point of view, and the consequent change in users' attitudes and habits.

Various measures and strategies can be envisaged to incentivise virtuous behaviour and orient employees' home-work journeys towards forms of sustainable mobility alternative to the individual use of private motor vehicles. This could contribute to the decongestion of vehicular traffic in urban areas.

There is therefore no doubt that knowledge of the mechanisms of different forms of mobility on various scales, i.e. national, regional and local, can be a starting framework for the improvement of the aforementioned strategies.

The shift towards more sustainable mobility is certainly a complex phenomenon, the management of which calls into play the contribution of various actors. These are, for instance, the automobile industry, which makes technological improvements aimed at reducing the environmental impact of private vehicles, national and international authorities. The latter authorities are in the position of setting standards to limit polluting emissions, while the local authorities can encourage car sharing, create bicycle and pedestrian paths, improve the efficiency of the public transport system, etc. Undoubtedly, the success of such measures depends on the will of travellers to adapt to them and integrate them into their daily routines. Consequently, a better understanding of the factors that determine individuals' travel choices appears necessary.

3.1 Future developments

The comparison of manuscripts in the literature revealed the need to pay more attention to the modal choices of Italians.

Mobility has been changing for many years, long before the pandemic; the traditional journeys from home to work and home to school have less weight, and the percentage of journeys for other reasons has increased. Furthermore, even before the pandemic there was a reduction in traffic during peak hours, due to a more articulated mobility in time and space.

Since March 2020, the demand for transport has become more complex, leading to completely new and different behaviours and patterns. Due to the spread of agile working, which is becoming more and more established and widespread, especially in large urban centres, we are witnessing a radical change in school- and office-related travel. The concept of 'rush hour' itself has changed considerably. Before the COVID-19 emergence, demand was inelastic with respect to certain variables, as there were preconditions whereby, for example, offices opened and closed at certain times. However, today the demand has become completely elastic and sometimes unpredictable, as even large companies have established differentiated access times and rules.

In pre-COVID we had a situation where the different mobility actors developed apps and information systems mainly for verticals, aiming also in some cases to expand, as with developments in local public transport, car sharing, in innovative transport areas where within a sectoral trend, however, there have been interesting developments.

Some mobility agencies have also attempted to develop a true integration of the different modes of transport by leveraging the concept of Mobility as A Service (MaaS). In this phase of recovery from the pandemic, it is necessary to push more on the integration and sharing of data and information on mobility because, considering the variation and indeterminacy of demand in this sector and the absence of well-defined peak times, we will have to manage a very particular, individual, disaggregated demand. This would involve a 'tailor-made' mode, dressing up transport, since we can no longer think in terms of commuting, home-school and home-work trips, as was the case before March. This will be an opportunity for the post-COVID period.

The current digital trend can lead to potential technological solutions, though it is necessary for the experts in the field to aim for integration between those adopted by the different public transport service providers.

There is a need, on the part of the transport supply side, i.e. public and private providers of transport services, for systems integration and concrete data sharing. In fact, considering the high fragmentation of demand, it is essential for the user to have real-time access to data, to the availability of the different means of transport and to the possibilities of purchasing the relevant tickets (or the single integrated ticket).

In conclusion, it is indispensable for the National Access Points (NAPs) of the transport sector, as aggregation points or 'data hubs', to develop not only in the direction of infomobility, i.e. to provide information on the real-time location of a means of transport, but also on the occupancy rate within a specific means of transport, in order not to exceed the limits on physical distancing and the prohibition of crowding. Finally, it allows booking, where possible, and the purchase of a digital ticket.

This research, which only investigates the Italian context, will be the starting point to fill the gaps in the research of the last two years and may eventually be extended to the European and global context.

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