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COVID-19 and low-cost bus companies in Europe: before and during pandemic crisis strategies and customer perceptions

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Abstract

This paper aims at assessing the operational strategy of FlixBus during the COVID-19, in relation to its main competitors and to customers' perceptions. We analysed FlixBus strategy based on its supply, and designed an online survey administered to European residents to understand their preferences towards leisure travelling during COVID-19. A sample of 437 respondents was collected and the Exploratory Factor Analysis followed by clustering was used to segment the customers' perceptions. Results show that willingness to travel, change in modal choice and destination are the factors featuring most the five clusters. An analysis of the Flixbus routes shows an overall dynamic demand-response strategy and a flexible approach closely related to their competitors' operations at the same time. FlixBus saw the pandemic as a new opportunity, entering in new markets and offering FlixDeal.

Keywords: Low-cost bus; FlixBus; european bus market; COVID-19; operational strategies; customer Perceptions.

1. Introduction

The European long-haul bus market has experienced many changes since the liberalization of some of its main markets, especially with the entry of low-cost transport providers, like FlixBus. FlixBus started its operations in Germany in 2013 as an intercity bus provider and evolved as a global mobility company, named FlixMobility. Then, it experienced increased competition from newcomers (i.e., BlaBlaBus) and recently faced a major disruption because restrictions and lockdown due to COVID-19. FlixMobility transported around 30 million passengers in 2020, half compared to 2019 (FlixBus, 2021); numerous challenges came and the plans for further internationalization of the brand were postponed. The impacts were also observed in other transport modes: for Deutsch Bahn, the number of

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long-distance passengers in 2020 reduced 46% compared to 2019 (Bahn, 2021); for the Swiss Federal Railways a drop of 50% (Deloitte, 2021) was observed, and a loss in demand was recorded by Trenitalia of 66.4% in long haul travel compared to 2019 (Press Release, FS ITALIANE, 2020). Such reduction could have been a temporary shock due to travel restrictions and the health situation, but some permanent travel behavioural changes are now observed. With the pandemic, companies like FlixBus had to deal with an unprecedent uncertainty that required them to re-think their operations and quickly adapt to the current scenario to survive.

The characteristic features and the impact of earlier crises can still serve as a reference for current challenges (Wen et al., 2005). The virus outbreak in the past that most closely resembled the COVID-19 pandemic was the SARS outbreak in Asia in 2002 and 2003 (Beria et al., 2020). In the case of SARS, however, the impact on travel was not limited to areas directly hit by the virus, but also contributed to a reduction in international travel in 2003 (Wilder-Smith, 2006). Strategic planning in times of high uncertainty might bring up strategic shifts on the plans of low-cost bus companies. FlixBus strategy focuses on offering cheap tickets and comfortable coaches with Wi-Fi and electric outlets available (Belyh, 2016). The digitalization of the service, especially the booking, is an important part of FlixBus strategy, knowing that a large part of its customers are young people (Flixbus, 2018). During the pandemic and even more in the transition periods, public transport needs a series of unconventional and specific preventing strategies (Zhou et al., 2020). Statista (2020), foresees the impacts of COVID-19, stating that the increase of internet use will lead a growth in the online bus tickets market, favouring digital players. This movement was accelerated by the pandemic, given that it led to a major shift to e-commerce and online purchasing. This research focuses on the long-distance bus market and aims at assessing FlixBus operational strategy in response to the pandemic in Europe and comparing it to some of its main competitors. To do so, a multi-analysis approach was set to understand the company's positioning and strategy beforehand and evaluate whether the company's culture and digital mindset influenced their approach during the crisis and if it translated into competitive advantage.

This paper is structured as follows: the next section presents the methodology followed by results reporting FlixMobility positioning before and during the pandemic and the survey outcomes related to traveller perceptions. Discussion and conclusions correlate the obtained results with the literature, mention some limitations and propose next steps of the research.

2. Methodology

A two-step methodology was followed to analyse the market strategies before and during the crisis scenario: a) in-depth analysis of the supply during the pandemic to assess Flixbus's strategy as regards the previous period; b) analysis of the perceptions and attitudes of the customers after the pandemic outbreak.

2.1. Flixbus supply assessment during the pandemic

An in-depth analysis of the supply has been done to observe how Flixbus changed strategy during the pandemic, by collecting data on weekly frequencies of FlixBus and its competitors. The supply was outlined using several sources: public news, companies' policies put in place during the crisis, and interviews to their managers. To evaluate the supply, the weekly frequency was used according to de Haas et al. (2017), which decreases distortions and allows the evaluation of market power and welfare. FlixBus operations in Europe were shut down from the half of March 2020 with a scheduled reopening depending on the relaxation of restrictions. Considering this, to understand how FlixBus started to ramp-up its operations across Europe, a period from June to the beginning of August (22nd to 32nd weeks of 2020), that precedes the historic high demand of the European summer, defined for the analysis of scheduled trips. Four cross-border and seven domestic routes chosen for the data collection, considering the effects of country restrictions on FlixBus operations. The same was assessed for at least one direct bus competitor in each analysed route. Data were collected from 25/05/2020 to 12/06/2020 and divided into two stages. The first stage lasted four weeks (May the 25th to June the 19th) to assess if there were relevant changes in supply during the week regarding the ramp-up of FlixBus operations in Europe. The second stage consisted of weekly data collections always on Sunday, and it lasted three weeks (June the 28th to July the 12th).

2.2. Survey to assess the demand during the pandemic

The attitudes of the customers after the pandemic outbreak were evaluated using a web questionnaire focused on two main topics: a) the mode choice of customers that had to return to their place of residence in the middle of the pandemic; and b) attitudes and preferences of the customers about travelling for leisure during and after the pandemic.

The survey, entitled "Has your mobility changed in the pandemic period (COVID-19) and how?", was made available in English, Portuguese, Spanish, and Italian. It was divided in three sections: residential information; dynamics of travelling during the pandemic and related perceptions and attitudes; socio-economic information. Each section provided 6-point Likert scale questions. The survey was programmed using Lime Survey and administered using mailing lists, social networks and news portals related to mobility/transport using the snowball sampling plan. The survey was administered to customers with fixed residence in Europe but with a focus on the markets studied in this research: Italy, Germany, Spain, Portugal, and France. Before diffusing the survey, a pilot test was made with ten transport experts and researchers to collect feedbacks.

The data analysis design provided a first descriptive analysis of data, followed by an Exploratory Factor Analysis (EFA) carried out using IBM SPSS Statistics. Bartlett test of sphericity, Kaiser-Meyer-Olkin (KMO) test and total explained variance were used, respectively, to analyse the correlation between the variables, establish the validity of the sample and to ensure significance (Hair et al., 2006). Then, a new score was calculated by adding up the scores of all the variables within each factor and then, the analysis-means clustering used normalised variables, followed by ANOVA (Analysis of Variance) to identify the significant factors in determining the clusters. Finally, a cross-analysis was performed using socio-economical and attitudinal variables to understand the profile of each cluster.

3. Results

The assessment of FlixBus and competitors supply in the period preceding the European summer is presented followed by the demand and customers' preferences during the pandemic.

3.1. Flixbus' supply assessment during the pandemic

The two main strategies analysed from the weekly frequencies, *baseline projection strategy* (week 22) reflecting the initial plan of the company for ramping-up their operations, and *ramp-up strategy* related to the variation in bookable weekly frequencies over the data collection timeframe (23-28 weeks), have allowed to depict the strategy the company adopted to ramp-up their operations, considering the baseline. The period between weeks 23 and 28 (*try-out*) details an initial supply following the end of lockdown and lift of travel restrictions preceding the summer; the period from weeks 29-32 (*peak-season*) represents a historic higher holiday demand.

Among the three ***short-haul routes*** (two in Italy, one in Portugal), the baseline for Milan-Bologna had a lower try-out supply of 11 trips/week, followed by a 68.2% growth on the 29th week (Fig. 1a). The ramp-up strategy consisted of increasing the supply after the "try-out" period but had a mixed behaviour during the peak-season. For Lisbon-Porto (Portugal) connection, supply was maintained in 14 trips/week without any changes in the analysed period.

For ***medium-haul routes,*** the French market only had bookable trips in the baseline scenario from the 26th week. The international case (Paris-London) was further complicated by European travel restrictions (Brexit already in force and 14-day quarantine on all arrivals). The baseline strategy consisted of a flat 84 trips/week supply from week 26. Considering the ramp-up strategy, FlixBus trips were gradually cancelled with 2 weeks in advance from the 23 to 28 weeks. Berlin–Munich baseline's supply started at 12 trips/week, but with an enhancement already initially scheduled for the week 25, up to 53 trips/week. In terms of the ramp-up strategy, the Berlin–Munich connection registered continuous cuts from 22 to 25 week. Even though the supply got reduced considering the baseline, it was still enhanced throughout the period, from 12 trips/week on week 23 to 68 on week 31.

Considering ***long-haul routes***, for Milan-Paris line, the baseline consisted of supply only during the "peak-season". The "ramp-up" strategy consisted of anticipating the re-launch of the line for week 25 and, for the "peak-season", provided an overall 76% reduction in weekly trips. The "try-out" supply was continually enhanced until reaching 22 trips on week 28.

Analysing the weekly frequencies, it is possible to understand that the character of the strategy followed by

FlixBus amidst the pandemic was less of a well-structured and defined plan and relied rather on what Mintzberg (1987) would call an "emergent" strategy. FlixBus remained flexible as regards the demand behaviour and the external situation to determine local approaches to the ramp-up. To better understand the strategy undertook in the different routes, in Fig. 1b matrix framework summarises the observed approach according to both "baseline" and "ramp-up" strategy.

The baseline strategy was divided in two options: "With enhancement" and "Constant". The first is related to routes for which their baseline supply is divided in two periods with two different weekly frequencies: one with low frequency and another one with a higher frequency. All routes characterized by a "with enhancement baseline strategy" were domestic routes while the ones characterized as "constant" were either a new or an international connection (see Fig. 1b). The ramp-up strategy was divided in three sections, cited in crescent order of the strategy dynamicity: "Stable", "General two weeks cut" and "Increase of try-out offer and decrease of peak-season offer".
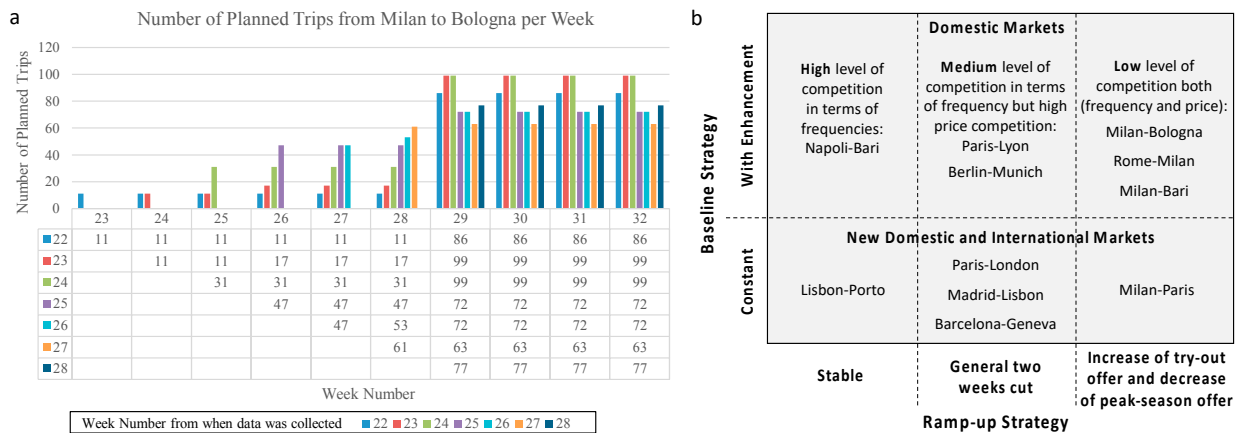

Fig. 1. (a) FlixBus' supply on the Milan-Bologna route; (b) Flixbus' supply strategy matrix during the COVID-19 pandemic.

According to the corresponding routes for baseline and ramp-up strategy, it was empirically observed that its dynamicity for domestic markets was inversely proportional to the degree of competition on the route. On domestic routes where competition was less fierce, FlixBus was able to approach its ramp-up on a more flexible way, also cancelling trips to design a supply more adherent to the current demand. That ensures that the company can maintain the closest to a profitable operation, putting on the road only strategic connections with a higher occupancy.

On more competitive routes, mainly where BlaBlaBus had a higher presence and accessible prices, FlixBus changed the supply with a smaller time window (mainly two weeks). An example is Berlin-Munich, whose baseline supply for the 25th week was of 53 trips, however only 15 of those were actually bookable the week before, suggesting a pressure to maintain market share focused to cash generation in light of the entry of BlaBlaBus with a constant supply. For Milan-Bari connection, MarinoBus had high weekly frequencies while FlixBus maintained its supply approximately constant, with a "stable ramp-up strategy". In the new Lisbon-Porto connection, a constant supply was put in place at lower levels. This strategy allows the company to guarantee maximum customer satisfaction while maintaining lower losses in a critical period. where customers were beginning to test their service. This was even more important considering the intense competition on the route due to Rede Expressos high frequencies and higher prices.

3.2. Demand assessment during the pandemic

The survey, out of 437 answers obtained, 360 ones in Europe, 237 from Germany and Italy. Most of the respondents were under 50 years old, in line with Germany where around 50% of long-distance travellers are bus users. 71% of respondents were already in their residence by the time of the pandemic and, thus, had not travelled back home during this period nor were planning to do so; thus, they expressed their opinions only on their current and future leisure and business travel plans. The other two groups (18% travelled during the pandemic and 11% was not in the place of residence) reported the trip made or that planned to return to their residence. The major reasons to return to the place

of residence were a concern on countries' lockdowns and the will to be closer to family during this period. 59% of the respondents did not plan return trip before COVID-19.

The most important factors of choosing a transport mode were hygiene standards, safety, and cost. However, for those using long-distance bus, hygiene standards, quantity of seats put on sale, and number of seats already booked were not among the important reasons to choose the bus. During COVID-19 many transport companies stated that selling only 50% of their capacity was not enough to cover all the costs, and therefore they considered that was better to cancel all the trips. This was the case of FlixBus, that re-started operations in May 2020 offering full bus capacity.

The items related to the plans made by the respondents when faced a high uncertainty scenario followed by months of lockdowns and travel restrictions were analysed to find out potential factors to cluster the respondents according to their reaction towards the leisure trips. The EFA gave seven factors by explaining 61.8% of total variance (Table 1).

Table 1. EFA: attitudes towards leisure trips during and after pandemic.

Factors / Attitudes	Modal safety	Willingness to travel in the pandemic	Change in travel habits	Change in modal choice	Change in destination choice	Travel after pandemic	Cancellation/rebooking policy
It is safe to travel with my private car during the pandemic	0.37						
It is safe to travel by plane during the pandemic	0.79						
It is safe to travel by bus during the pandemic	0.85						
It is safe to travel by train during the pandemic	0.86						
It is safe to travel using car-pooling during the pandemic	0.73						
I went on a holiday trip in July/August 2020		0.59					
When governments authorized, I started going on weekend getaways		0.75					
When governments authorize, I intend to do long leisure trips		0.76					
I feel now is a good moment to plan my future leisure trips because of lower prices/promotions		0.44					
Unintended in international leisure trips this year		−0.55					
When travelling for leisure after the pandemic I feel safer going to places I already know			0.74				
I will begin travelling for leisure to less crowded/known destinations			0.59				
I feel safe to do leisure trips now, but I would not do it because it is not socially acceptable			0.49				
When the pandemic is over, I will use more private modes for leisure trips because of fear of being infected			0.51				
After the pandemic is over, I prefer domestic leisure trips			0.62				
Due to COVID-19 I changed the mode of transport to go on holidays				0.85			
Due to COVID-19 I changed the mode of transport to go on weekend getaways				0.87			
I Intend to change weekend gateway destination due to COVID-19					0.75		
I Intend to change my holiday destination due to COVID-19					0.84		
I will only go on weekend getaways when pandemic is over						0.84	
I will only do long leisure trips again when pandemic is over						0.83	
I will read more carefully the cancellation/rebooking policy when booking a leisure trip from now on							0.81
I feel eager to pay more for a more flexible cancellation/rebooking from now on							0.75

The seven factors were then used to cluster the respondents, obtaining five clusters (Table 2). The first cluster, *travel enthusiasts and risk takers*, perceived the different modes as safe, thus willing to travel during the pandemic. They want to restart travelling as soon as governments allowed or were already making plans for the near future, but worrying about their habits, destination, or cancellation policy. The second cluster, *adaptable travel enthusiasts*, shows a quite high willingness to travel even during the pandemic, but they are more open to change their travel plans, especially in terms of travel habits (types of trips and destinations) and to change their holiday and/or weekend gateway destinations. The third cluster, *flexible travellers*, shows a more flexible approach towards leisure travels and although they consider the different modes as safe, they are less willing to travel during pandemic, even though they show the highest values for the factors involving a behavioural change (habit, mode, destination). The fourth cluster, *adaptable cautious travellers*, prefer returning to travel only after the pandemic. They are, however, open to changes

in their habits and destination choices and give more importance to the cancellation/rebooking policy. The fifth cluster, *cautious and conservative travellers*, shows the lowest scores for the willingness to travel amidst the pandemic, changes in mode and destination choices and for the cancellation/rebooking policy.

Table 2. Clustering: attitudes towards leisure trips during and after the pandemic.

Cluster (size)	Modal Safety	Willingness to Travel in the Pandemic	Change in Travel Habits	Change in Modal Choice	Change in Destination Choice	Travel After Pandemic	Cancellation/ Rebooking Policy
Travel enthusiasts and risk takers (73)	14.86	12.09	5.47	1.42	1.66	2.86	5.95
Adaptable travel enthusiasts (69)	9.42	9.69	9.19	4.14	6.72	2.58	6.09
Flexible travellers (74)	10.09	5.61	14.69	7.39	6.77	6.96	7.95
Adaptable cautious travellers (90)	7.54	2.09	9.34	2.13	5.72	6.96	6.97
Cautious and conservative travellers (54)	7.72	1.52	6.94	1.89	1.11	5.79	3.48
Grand Mean	9.94	6.21	9.27	3.42	4.61	5.11	6.27
Between mean squares	26.52	38.47	34.42	41.57	44.98	34.90	27.03
Within mean squares	0.71	0.58	0.62	0.54	0.50	0.62	0.71
F-ratio	37.22	66.57	55.22	76.56	89.18	56.48	38.24

Each cluster was cross analysed with the socio-demographic and behavioural data (Table 3). The *adaptable travel enthusiasts* include the highest percentage of males under 35 years old (75%), which seems consistent with the youth's attitude to be more flexible to changes while not giving up on travelling during the COVID-19 period, adapting their habits and destinations if needed. The *risk takers* mainly have been in their place of residence since before the pandemic (77%), whilst the *cautious and conservative travellers* show the highest percentages of users who returned home during the pandemic. This suggests that the effort made to return to home and their experience in the trip might have made them more cautious and less willing to travel again during the pandemic. The *risk takers* show the highest percentage of those preferring to book the return trip less than a week in advance, which seems consistent with the risk-taking tendency. The *adaptable travellers* (*travel enthusiasts* and *cautious*), show the highest percentage of German residents and show high scores for the adaptability to change the destination choice. The *adaptable travel enthusiasts* also show a high score for the willingness to travel even during the pandemic. This aspect, together with the fact that Germany, Italy, and France were the countries more prone to go on a holiday trip during the summer of 2020, has highly influenced the destination chosen by the residents.

Table 3. Cross-analysis between leisure trips' preferences and socio-demographic characteristics of clusters.

	Clusters	Travel enthusiasts and risk takers (%)	Adaptable travel enthusiasts (%)	Flexible travellers (%)	Adaptable cautious travellers (%)	Cautious and conservative travellers (%)
Gender	Male and Female	44 and 55	36 and 64	41 and 59	31 and 69	31 and 67
Age	0-24	30	29	19	29	22
	25-35	34	46	48	32	47
	36+	36	24	34	39	32
Country of Residence	Italy and France	38 and 8	25 and 14	39 and 3	43 and 4	52 and 4
	Portugal and Germany	11 and 21	4 and 33	8 and 24	4 and 33	11 and 19
	Switzerland and Spain	5 and 12	4 and 9	3 and 8	1 and 8	4 and 9
Status of the respondent	At place of residence before COVID-19	77	71	66	71	67
	Not at place of residence	11	14	15	16	13
	Returned home during COVID-19	12	14	19	13	20
Time in advance on booking the return trip	Less than 1 week	58	23	41	22	33
	1 week	0	8	29	17	17
	2/3 weeks	16	46	6	17	34
	1 month or more	25	23	24	45	16
Transport mode of the return trip	Long-distance bus and Train	23	21	40	32	31
	Plane	62	71	35	63	46
	Private car	15	7	20	5	23

4. Discussion and conclusions

This research aimed at assessing the operational strategy of FlixBus during the pandemic in Europe and evaluating whether it was adherent to its business model and to customers' perceptions.

Beside the flexible ramp-up strategy and a strong increase of supply during the summer on the main lines, FlixBus implemented a rigorous hygiene protocol, including mandatory mask use, regular disinfection of its fleet and hand sanitizers' provision, and offered vouchers for future trips. The prepaid vouchers were called FlixDeal and could be redeemed for any FlixBus or FlixTrain direct one-way trip ticket. The vouchers were sold for a €14 flat-rate in the beginning of the pandemic and were valid for three years. This strategy, that contributed to cash gathering in a period when lockdown forced the company to stop operations and reduced its revenue flow, was close to the preferences of both *travel enthusiasts and risk takers* and *adaptable travel enthusiasts*. Both clusters evaluated the pandemic period as an opportunity to plan future leisure trips because of promotions, apart from being more willing to travel even during such a period. In addition, the latter cluster shows the highest percentage of individuals under 35 years old, an important share of FlixBus market, as showed by the market analysis.

An important drawback of the demand in sanitary crises is that its bounce-back might be gradual and accompanied by a higher level of fear and aversion to risk. The survey showed that *adaptable travel enthusiasts*, *flexible travellers*, and *adaptable cautious travellers* recorded the highest scores for "change in travel habits" and "change in destination choice". The first factor includes the preference to go on domestic trips even after the pandemic and a feeling of higher safety by going to less crowded and already known places, while the second one explicit a change in travel destination due to COVID-19 for weekend gateways and holidays. The above three clusters included the highest percentage of German residents, confirmed by experimental data by Destatis (2021), which used mobile phone data to compare mobility inside Germany between 2019 and 2020. A great fall in mobility rates in March 2020 was followed by a growth from April to July. In the state of Mecklenburg-Western Pomerania the mobility in 2020 recorded indexes far higher to those of 2019, reaching a value of 79.33% higher than in 2019. In addition, there were several days with mobility rates more than 70% higher than the previous year during July and August. Such state is located in Northern Germany, along the Baltic Sea coast, a summer destination with beaches, resorts and lakes, and its mobility increase confirms our results, showing a change in destination for the summer and a preference for closer places.

FlixBus operations and strategy in the pandemic, its flexibility, the stronger comeback on essential routes and nearby holiday options is strongly consistent with its business model: the focus on essentials, affordable mobility, and a tech-focused approach; such aspects differentiated the company from its competitors during the pandemic period, being better able to have flexible supply on its connections and quickly react to changes in demand. The flexible ramp-up of operations implemented by FlixBus was also consistent with the high dynamicity and uncertainty of the market. With such uncertain and unprecedented demand, this strategy can work like a threat of investment, discouraging competitors to ramp their own operations up and thus ensuring a higher revenue for the company. This flexibility, however, does not come easy for any type of company, and this is a big competitive advantage for FlixBus given its entrepreneur spirit and digital mindset. This approach includes the company's focus on internationalisation and expansion, affordability, and sustainability, without clearly stating the "how" in a structured and explicit plan that could limit its strategy. This, FlixBus strategy in the pandemic was a flexible and dynamic approach to the ramp-up of operations, closely following demand's evolution and competitor's supply, without giving up on expansions even in such moment. For example, FlixBus national operations in Portugal started in May 2020 and later in the UK and, in the first semester of 2021, FlixTrain started operations in Sweden, the first market outside Germany, and expanded its German network considerably. It is well worth to highlight also a recent new round of investments for FlixMobility, a series G round of funding of more than US$ 650 million, raising its valuation at over US$ 3 billion. The only other company that could have had the same advantage is BlaBlaCar; however, its lower market power in the bus segment limited its response to the crisis, thus having a smaller supply and a delayed re-launch comparing to FlixBus.

The main difference observed between domestic and international lines was a more conservative approach in the international connections, given they were more risky connections during a pandemic period. It was characterized by a constant baseline supply and a ramp-up strategy more leaned towards reducing frequencies from the baseline. The inverse relation observed between dynamicity in the ramp-up and the intensity of competition observed in the domestic lines was not seen in the international ones.

As observed in the survey, FlixBus approach was also pertinent to important market segments, being able to maintain its competitive positioning especially when compared to traditional players like MarinoBus, ALSA and Rede Expressos. Even though BlaBlaBus offered higher frequencies than traditional players and tickets with prices similar to those of FlixBus, FlixBus still took advantage of its position and already higher market power in Germany and France. Such advantage, combined with a more careful approach to their ramp-up, guaranteeing enough supply not to lose demand in favour of its main competitor, ensured a strong comeback even on routes with more intense competition. The data used for this study, however, focused only on weekly frequencies and companies' policies. Therefore, future research shall be made to assess the results of this supply in terms of bus occupation and revenue, which are not publicly available data.

Another important point of discussion considering the supply of a long-distance bus provider in a pandemic period, apart from the weekly frequencies, is how the trips are allocated in terms of day of the week and timetable; both were not analysed in this research. However, the approach is considerably similar: dynamicity and flexibility has proven to be key, once, as observed in the German mobility data and in the results of the survey, the demand profile during the pandemic period is consistently different from previous years. That is, the historic data on the level of demand and seasonality of a given route are not as important as on-time demand assessment in such a unique situation.

Data from 2020 and correlation with different COVID-19 waves in Europe must be analysed in order to provide insights for future waves and possible future mobility disruptions, providing better historic data to deal with those situations. This also yields an opportunity to design specific routes for the pandemic period, for example, reinforcing connections between main German cities and the northern sea, and other urban centres with closer holiday destinations according to the demand observed in the first waves of the COVID-19 pandemic. This was a tendency observed in the survey. The framework used to analyse the supply and the customer reactions allowed summarising the main aspects of FlixBus when dealing with a health-related transport disruption now and in the future.

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