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An empirical study of customer satisfaction in the Italian railway industry: a focus on IBM case study

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ABSTRACT

Customer satisfaction, nowadays, is one of the major factors of profitability of each business. Recently, in such a fast-pacing world, the need of addressed solutions or services that lead to customer satisfaction has become a compelling one. As a matter of fact, customer satisfaction is the best way to secure loyal customers: businesses, thus, should consider customer satisfaction to be a critical business component and strive to improve it. The following research, thus, aims to focus on customer satisfaction and its antecedents in travel and transportation environment.

Specifically, the aim of the study is to find the antecedents of the customer satisfaction in the railway industry, focusing on the Italian one. This factor has not already been highlighted by the present literature, giving the possibility to undertake further research. Besides, the study will also investigate the relevance technology applications on customer satisfaction and how much customer understanding may influence customers on choosing a solution in the railway sector specifically. Moreover, combining those two features, an analysis about how the convergence of customer satisfaction factors may lead to customer retention will be conducted.

A sample of 152 participants has been selected to analyze customers' preferences for the above-mentioned characteristics and the antecedents of customer satisfaction for businesses in the travel and transportation industry, notably in the railway sector were identified.

In addition, a case study based on the customer satisfaction issue of railway sector will be run. Through the technologies of IBM portfolio moreover, the objective of the research may be fulfilled.

Key Words: Customer Satisfaction; Technology; Customer Understanding; Customer Retention; Railway Industry; IBM.

Paper Type: Research Paper

INTRODUCTION

Customer satisfaction is the degree to which customers are satisfied with a product, service and/or company and happens when the customer's expectations regarding various elements have been met or even exceeded. More precisely, it is when the offer proposed to customers meets or exceeds their expectations that it is possible to speak of customer satisfaction. It in fact represents the perception or evaluation of how well an organization can deliver on the promises communicated to the target audience.

Over the years, advances in business have mostly fueled development in business principles such as marketing, transportation and distribution, and consumer satisfaction in order to survive in an increasingly competitive corporate world. The rising level of consumer expectation has prompted an industry-wide search for high-quality, cost-effective customer service. Most of changes are the consequence of massive forces that have long-term effects on an organization, such as the growing importance of customer service and continual changes in customer demand and preferences.

Nowadays, according to Gartner¹, 81% of marketers view customer satisfaction as the main competition area: the more customers are satisfied, the more businesses gain competitive edge. On the other hand, customer satisfaction is yes fundamental to gain competitive advantage, but it is important to retain customers too. According to PwC², 59% of customers will leave a company after several bad experiences, and 17% after one bad customer experience. In a highly competitive railway sector, such as the Italian one, ensuring customer satisfaction is one approach to acquire a competitive advantage. This customer centric perspective not only leads to positive for the customer itself but for each business too. Besides, it is also true that providing enjoyable services and solutions is one of the most important components in ensuring the company's long-term success and growth.

The analysis will, thus, examine the antecedents of customer satisfaction in the travel and transportation, particularly in the Italian railway sector. Analyzing the effect of

¹ (Key Findings from the Customer Experience Survey | Gartner, 2022)

² (The future of Customer Experience, 2022)

customer satisfaction on customers, thus, will allow to consider the concept from the customers' point of view. Before beginning the research, the next chapter will review prior studies on the topic and highlight the key findings that will serve as the research's foundation. The first chapter thus, will depict the travel and transportation sector in Italy, focusing on the last decades competition of the Italian railway sector.

Secondly, the next chapter will analyze customer satisfaction through a deep analysis of the literature review to discover the gap of the literature regarding the railway sector's customer satisfaction. This investigation will draw attention to any publications that do not exist on the antecedents of customer happiness in the railway business, particularly in Italy. In the travel and transportation industry, the literature will summarize the antecedents of customer satisfaction, technology applications, customer understanding, and customer retention. As a result, the research will be focused on filling a gap in the existing literature in this subject related to customer satisfaction antecedents, as well as contributing to current findings. The gap therefore will lead the research to three central questions that will be discussed in the third chapter.

Therefore thirdly, it will be analyzed the gap of literature through a survey conducted out of 152 respondents. After this, through the data collected, to testify the reliability of the data collected, a conjoint analysis has been carried out. The research questions stated before will be proven through the outcomes tested, and management implications will be carried out. Lastly, the study's shortcomings and future research will be examined, with the study's overall findings drawn.

In conclusion, taking into account the research highlighted through the literature analysis and the conceptual framework assessed, a case study will be considered. The latter is about the Social Seat Map solution, which was suggested by IBM (International Business Machines) for FS technology (the Ferrovie dello Stato's technology sector). Solutions that can impact choices and implement client satisfaction could make a difference in the railway industry, since there is a broad portfolio of alternatives and choices. As a result, this solution would focus on the primary determinants of customer satisfaction, harmonizing the study results and providing validation of what has been researched thus far.

CHAPTER ONE

Travel and transportation industry: a focus on railway sector in Italy

1.1 Introduction

Travel and transportation industry has been, through over the XX century to nowadays, a crucial industry of the Italian economic scenario. In the years, Italy has established a well-developed transport infrastructure and from airplane to railway have been a fundamental part of Italian GDP.

This industry comprehends different types of transportation such as: transportation infrastructure (the construction, maintenance, and operation of transportation infrastructure); public transport; airlines; railways; maritime shipping; cruise industry, trucking industry; logistics...etc.

Moreover, according to Statista.com, the travel and transportation sector in Italy clearly accounts for most of the transport workforce, taking for example the table below of 2019 scenario.

Warehousing and support activities	348,90
Road freight transport	347,20
Road passenger transport	166,40
Postal and courier activities	150,20
Sea transport	48,70
Railways	45,50
Air transport	20,30
Inland water transport	3,20
Pipelines	2,30

Table 1: Number of employees in the transport sector in Italy in 2019 in thousands³

Taking into consideration the railway sector, nowadays also accounts more than 82000 employees⁴, meaning the great importance given to the transportation industry.

In truth, the Italian rail network has always been substantial, particularly in the north, and today includes a high-speed train network that connects the country's major cities

³ Statista.com

⁴ Luigi Ferraris, Presentazione Piano Industriale 2022-2031

from Naples to northern towns like Milan and Turin becoming the world's 13th largest rail network⁵.

Besides, with a total length of roughly 487,700 km⁶, Italy's road network is also extensive. It has a large motorway network (6,400 km), which is largely toll roads, as well as national and local roads.

Instead, there are 45 (civil) airports in Italy, widely distributed throughout the Peninsula, even if not all regions boast one. Molise and Basilicata, in fact, do not have hubs for air traffic, but they can count on the neighboring regions which are very well supplied. Finally, Italy has many harbors for the transit of goods and people due to its vast coastline.

As for the train system history, we can trace its origins back to the XIX century and especially between the years 1860 to 1873, that is the primary period of railway development was around the time of unification. The government sold its stake in 1865 due to the high expenditures of constructing the infrastructure. The networks supplying Milan, Genoa, and Turin in the north had matured by this time. When the network was renationalized in 1905, a period of simplification and modernization began, and additional train lines were built throughout the twentieth century. The early electrification of the lines, many of which traveled through deep tunnels and were unsuitable for steam power, was a unique characteristic.

During the whole XX century the peninsula's rail network was well-connected, although there were significant qualitative disparities between its northern and southern components, still present nowadays. The north has always had more frequent and speedier services, and more double track lines than the south. Moreover, the connection with the rest of Europe was made possible thanks to a multitude of mountain routes.

By the passing of time, routes were expanded, extended, and upgraded in the late twentieth century, including the addition of high-speed lines and computerized booking and freight control systems.

⁵ italiarail.com.

⁶ <https://www.worlddata.info/europe/italy/transport.php>

In a wider context, the Italian trains transport has always provided little freight but more amount of passengers in comparison to other European networks, partially because the railways failed to keep up with the high rate of industrialization after WWII, while the passenger lines were made cheap through government subsidies. Finally, the 80% of the Italian railway system till the initial of its privatization in 1992, was controlled through "Ferrovie dello Stato Italiano."

Anyway, till nowadays, the Italian industry investments in this field have faced several challenges and statics may confirm this. One of these challenges is shown below: the trend is in continuous decrease since early 2000s, meaning a less close attention to the infrastructure of railway systems and investments. A catalyst of the trend may have been the financial crisis that affected the whole world in 2008.

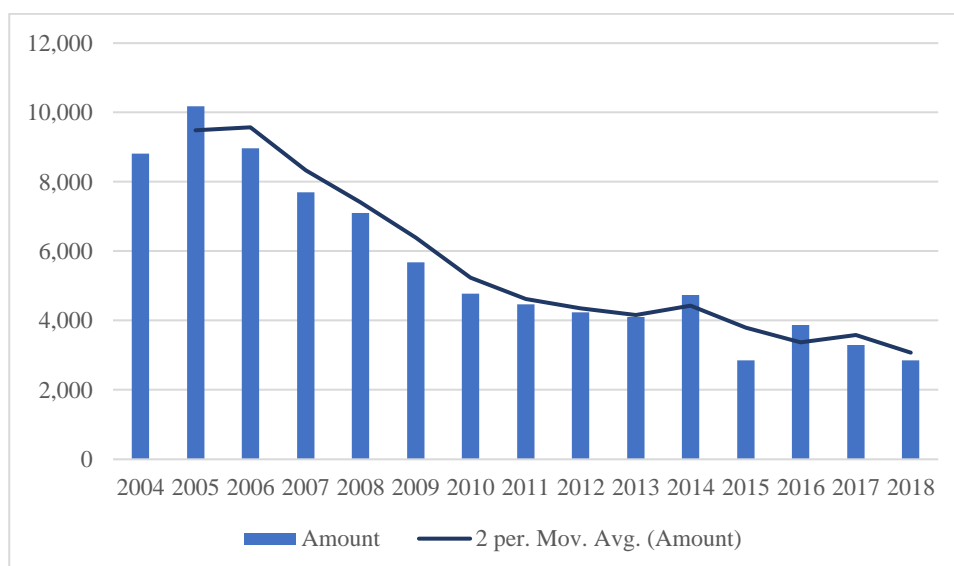


Figure 1: Amount of money invested in rail transport infrastructure in Italy⁷

1.2 History of the fierce competition of railway industry

*"Effective competition in the railway sector: a great challenge"*⁸.

This was the title of the speech given by Mario Monti, the European Commissioner for Competition Policy at the time, at UNIFE's annual conference in May 2002. The quote is still relevant after 20 years. In fact, even though the first European directives on the development of Community railways date back twenty years and that progress

⁷ Statista.com

⁸ Mario Monti, EU commissioner

in particular market segments are obvious, it remains a struggle, despite widely disparate results between EU members.

Ferrovie dello Stato launched the first railway service in 1905, marking an important milestone in Italy's unification effort. For more than a century, it contributed to the country's economic, social, and cultural development. The history of the State Railways was indeed marked by innovations, records, and major strategic works that have become ingrained in the lives of Italians. Change, development, and modernization have always been part of the company's guiding values.

The FS Italiane company is responsible for over 46,000 kilometers of railway and road network infrastructure in Italy, connecting and integrating the country while improving quality and safety standards. On December 31, 2020⁹, the domestic railway infrastructure operated by Rete Ferroviaria Italiana, a subsidiary of the FS Italiane Group, covered 16,782 kilometers. For determining the railway network use charge, the network is classified into the following groups, according to Ministerial Directive 43/T of March 21, 2000:

- 6,468 km of fundamental lines with high traffic density.
- supplementary lines, which cover a total distance of 9,364 km and provide a dense network of regional linkages and interconnections with the main lines.
- hub lines, which cover a total distance of 950 kilometers and are in key urban centers.

On 12,46 km of track, a train speed control system (TSCS)¹⁰ has been installed, which monitors braking space and train performance to determine the safe distance between trains, while high-speed lines have a sophisticated European signaling system for more precise traffic management and the ERTMS/ETCS (European Rail Traffic Management System/European Train Control System), a single radio system that makes the network interoperable at speeds of up to 300 km/h.

In particular, the Trenitalia travel section of FS Italiane, which has merged much of the know-how of the Italian Railways' 160-year history, is a priceless heritage that,

⁹ Fs Italiane Group

¹⁰ Trans-European Railway High-Speed UNECE

now free of rigidity and constraints, is enriched every day with new knowledge and skills as they fly to operations, in terms of methods, tools, techniques and guidelines. The company's goals include assuring the country of a quality service offering capable of meeting the mobility needs of travelers on a national and European level, committing to make the industrial structure more modern and functional, and directing the company toward technological development and turnover at cost-effective rates, while working to compete with loyalty and professionalism. Trenitalia regards the centrality of the customer connection to achieve a steady competitive advantage and create value for the “shareholder” as key prerequisites for achieving a stable competitive advantage and creating value for the “shareholder”.

Trenitalia is dedicated to meeting customer and market demands, ensuring ever better safety standards, and implementing development and modernization plans that are socially and environmentally sustainable. Trenitalia aspires to be one of the leading players in the European rail transport market, and to achieve this, it will be necessary to pursue major strategic objectives in the coming years, including:

- Consolidation in Italy: monitoring of the national market share of high-speed services.
- Expansion in Europe: entry into new profitable markets thanks to available capacity following the delivery of the new high-speed fleet.
- Modal integration of high-speed services.

On the other hand, NTV (Italo-Nuovo Trasporti Viaggiatori) is a well-known Italian railway business that specializes in high-speed transport born in 2006, with Luca Cordero di Montezemolo as its creator and president. The company therefore competes with Trenitalia and its Freccia services in the high-speed market on RFI ("Italian Railway Network") lines.

Montezemolo's plan was to join a market that had been monopolized by the "Italian State Railways" until his transport company was founded. Entering a market monopolized by one of the largest public businesses handled directly by the Ministry of Economy and Finance has presented numerous strategic and political challenges. In 2006, the entire country was offered the foundation of a new high-speed transportation service. The goal was to introduce competition on high-speed lines for the first time in Italian history, a notion that arose considering the European Union's previous railway

liberalization, a principle that allows for many operators to use the same railway infrastructure.

The concept was entirely new; in fact, it concerned Europe's first and only private high-speed train. Intesa San Paolo and SNCF (the public French train operator) joined the firm two years after it was founded. NTV's plan was clear: it would compete based on the reputation that Italians have nearly always had for the services provided by state transportation. The goal was to provide a high-quality service that could overcome the long-standing critiques of Italian railway stations.

Anyway, NTV misjudged the problems it would have in dealing with the monopoly of FS Italiane, and the rivalry was already in the limelight of the entire country in its early years. Consequently, Italo was initially denied access to the pricey and congested main stations of Roma Termini and Milano Centrale. As a result, the firm was compelled to rely on the two Milan Porta Garibaldi and Rome Tiburtina subsidiary stations.

In other words, RFI was actively attempting to prevent the new Italo trains from entering service. NTV highlighted the unfair competition of one of the country's greatest public works projects by purchasing numerous pages of the most prominent newspapers. To summarize, an average price of 13.4 euros per kilometer was agreed upon to be permitted to circulate on the state railways, which sanctioned an annual deal of around 140 million euros that NTV had to pay to RFI for the first 25 trains that circulated every day. In 2017, the Transport Regulatory Authority (ART) reacted to a complaint made by Italo-NTV alleging that RFI had failed to provide fair access to railway infrastructure. RFI was fined 620,000 euros by the ART for "seriousness of RFI's violation, harming the values of transparency, fairness, and discrimination."

TRA Consulting, the consulting firm that follows NTV, published multiple reports in which its CEO Andrea Giuricin detailed the benefits of competition in the railway business. It is apparent from these reports that the competition has benefited Italian travelers. Italo's major competition comes in the form of ticket prices, which it has always strived to keep lower than Freccie's ones. Many statistics reveal that since the market's inception in 2012 and 2016, the average ticket price has reduced by nearly 41%¹¹.

¹¹ StartingFinance.com

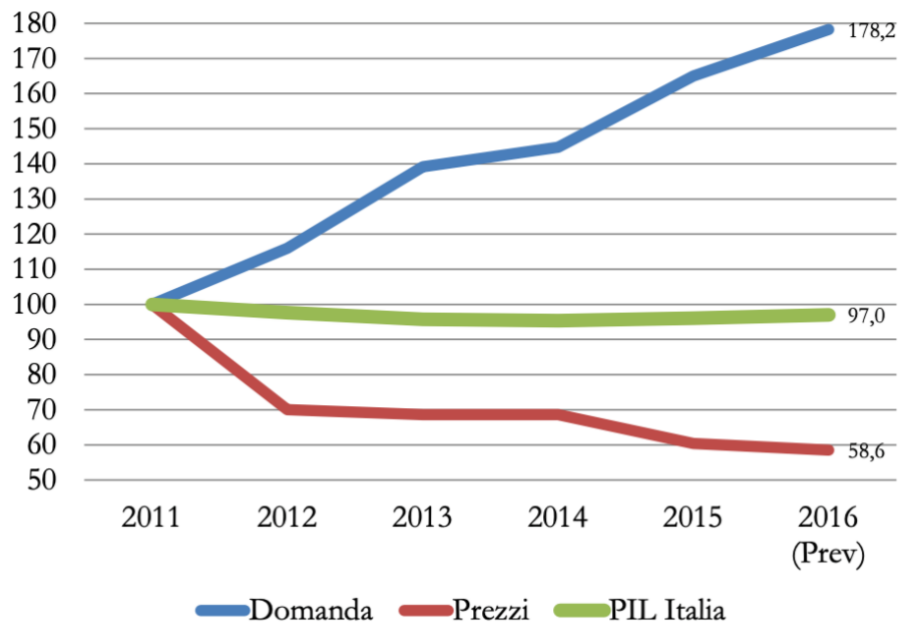


Figure 2: Supply and Demand in Highspeed Trains¹²

This is the clearest indication that price reductions have resulted from competition. Furthermore, it is estimated that travelers saved more than 800 million euros between 2012 and 2016 due to price reductions for Italo passengers alone. The graph shown above clearly demonstrates the trend by which competition is favorable for both passengers and firms.

In summary, Italo faced numerous challenges that were overcome by eliminating the monopoly in the field of rail transportation that had existed for nearly a century, thereby stimulating a process of innovation, and making transportation more accessible. After all, *“Competition is not everyone's struggle against everyone. It is a process of identifying the most "social", the most capable of satisfying mutual interests. In competitive markets, you don't take something without giving something else in return.”*¹³

1.3 The Covid-19 effect on travel & transportation industry

The coronavirus pandemic (COVID-19) and the measures put in place to stop it have had a significant impact on the travel and transportation industry. The potential shock due to the decline in the international tourism economy in 2020 could fluctuate between 60 and 80 percent compared to 2019, depending on the duration of the health

¹² StartingFinance.com

¹³ Friedrich Hayek

crisis and the speed with which travel and transportation resume, according to the scenarios identified based on OECD estimates.

In particular, the railway system has always been a popular mode of transportation. Indeed, the annual passenger train travel volume in Italy is shown in the graph below from 2006 to 2019. The volume of passenger transportation fluctuated during the observation period. Passenger rail transit reached a high of 56.5 billion passenger kilometers in 2019. In 2012, the lowest volume was 46.75 billion passenger kilometers.

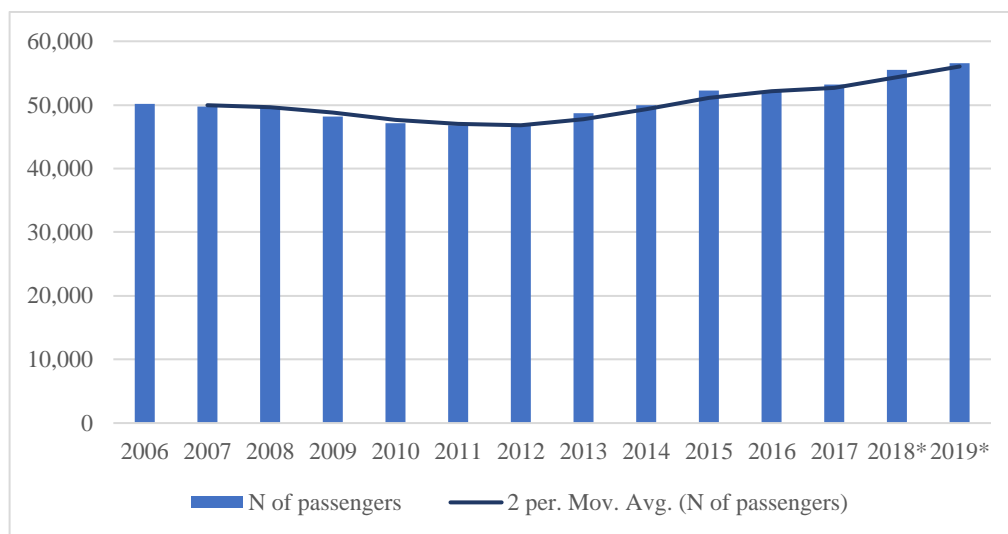


Figure 3: Volume of passenger rail transport in Italy from 2006 to 2019 (in million passenger-kilometers)¹⁴

A previously unimaginable transportation slowdown resulted from the high level of uncertainty that characterized the economic situation, combined with a drop in industrial production across all major industrial segments (-11.4 percent YoY¹⁵) and mobility restrictions imposed to contain the spread of COVID-19. Overall mobility plunged during the public health emergency and only gradually improved throughout the summer months before dropping again during the pandemic's second wave towards the end of the year.

According to the most recent data, automobile traffic on highways fell by over 80% between March and April and only partially rebounded in the summer. When the pandemic resurfaced in the autumn, the decline was less severe. The annual reduction

¹⁴ Statista.com

¹⁵ FSItaliane Group

in light vehicle traffic was 30.5 percent at year's end¹⁶. Collective transportation, which is primarily made up of local public transportation (LPT), was hit worse than individual transportation, with contractions of more than 90% in March and April and only partial recoveries in the summer months.

Government restrictions on mobility within the country and across borders have taken a toll on air traffic. In 2020, the number of available routes and scheduled flights between a country and the rest of the world decreased substantially. In total, 53 million people were transported by air in 2018, compared to 193 million in 2019. The cruise ship transportation trend was likewise bad. According to Assoport, barely over 640 thousand people went through Italian ports, including boarding, disembarking, and transit, a 94.5 percent decrease from the previous year. The freight segment witnessed smaller drops, confirming the critical role that logistics played in the country's social and economic well-being throughout the lockdown. In March and April, heavy vehicle traffic on roads fell by about 40%¹⁷, recovered in the months that followed, and showed more resilience in the second wave of infections in autumn.

Overall, heavy vehicles traveled 15.2 percent less distance on highways maintained by members of Aiscat (the Italian association of motorway and tunnel operators) and former members. Despite its critical role in the provision of gadgets and medical equipment around the country during the pandemic, air cargo transport suffered a more drastic drop (-24.9 percent from the previous year). Despite the economic crisis induced by the pandemic, freight transit by sea remained strong, with quantities of container goods moving through Italian ports totaling 10.7 million TEUs (twenty-foot equivalent units), down 0.9 % from the previous year.

1.4 Major Post-Pandemic Trends of railway industry

As mentioned previously, one of the latest challenges the whole travel sector has faced is the coronavirus pandemic. Anyway, although the rail industry was not immune to the consequences of the pandemic¹⁸, it along with the travel and transportation in general have gradually resumed.

Organizations have implemented plans for recovery to ensure long-term survival and profitability in a post-pandemic world as countries open and demand for both

¹⁶ FS Italiane Group Annual report 2020

¹⁷ FS Italiane Group Annual report 2020

¹⁸ IBM.com

passenger and freight transportation of goods begins to rebuild. Supply chain and business continuity are becoming increasingly dependent on technology-driven innovation. Recovery hinges on lowering operating expenses, enhancing agility, and reducing consumer health concerns.

Beyond COVID-19, introducing digital connections between rail passengers and business has been mainly able to benefit the sector, becoming the real solution for the re-birth of the travel sector in general. We now do live in a digital age where most of individuals book their vacations online. As a result, new trends are sweeping the railway industry, ushering in a new era of interconnectedness and customer-centricity, as analyzed below.

- Overcoming an outdated business model

Despite developments in digital ticketing, if someone is traveling with various firms, they must still reserve travel on separate websites or through a travel agent. The business model to keep up with how people want to travel has not been changed until now. Travelers demand a ticketing system that includes long-distance, regional, and local transit options, as well as Uber and other car-sharing services, creating a multi modal ecosystem¹⁹

- Introducing blockchain for transparency and accountability

The mobility industry will be transformed by blockchain technology. For those unfamiliar with blockchain, it ensures that digital transactions are accurate, accountable, and transparent. It works on the background to record those transactions on a distributed ledger that is shared by multiple entities throughout a value chain. Participating mobility firms use this technology to join the blockchain to track trip purchases and ensure precise payments.

- Revolutionizing travel and mobility

Blockchain technology has the potential to transform the whole travel business. It allows mobility providers to provide end-to-end travel services not just in Germany or

¹⁹ Luigi Ferraris Presentazione Piano Industriale 2022-2031

Europe, but globally. The consumer may book a single ticket and fly, cruise, ride, or drive wherever they want without having to worry about who will provide the service or how and when they will be paid²⁰.

Using the Blockchain will make interacting with other mobility providers along the travel value chain much easier. A broader range of businesses will probably join the service since they know that every booking and payment transaction will be precisely recorded, ensuring that they get paid.

- AI application and Predictive Analytics

Predictive analytics is a type of advanced analytics that makes predictions about future outcomes using historical data, statistical modeling, data mining techniques, and machine learning. Businesses employ predictive analytics to detect data trends and identify threats and opportunities. Predictive analytics is typically linked to big data and data science. Deep learning and machine learning algorithms are used by data scientists to find patterns in data and generate predictions about future events. Just a few examples include linear and nonlinear regression, neural networks, support vector machines, and decision trees. The results of predictive analytics can then be transferred to prescriptive analytics for further analysis and action planning. A versatile framework for developing predictive analytics could provide several advantages, including:

1. Scalability: Data science and data engineering tasks can be automated. Models are effortlessly trained, tested, and deployed across numerous corporate applications. Extend hybrid, multi-cloud data science capabilities.
2. Speed: Use pre-built apps and models that have already been trained. It can help data scientists and business teams communicate and streamline model construction.

²⁰ Luigi Ferraris Presentazione Piano Industriale 2022-2031

CHAPTER TWO:

1. Customer satisfaction: the cornerstone of any Business

1.1 Introduction

Customer satisfaction is one of the most essential and examined concepts in modern marketing. It reflects the perceived quality of products and services that are delivered to customers²¹. Several academics have sought to investigate consumer satisfaction in the travel and transportation industry in a systematic way²². According to the findings of these studies, customer satisfaction is likely to result in positive customer behavior such as return, repeat purchases, buying recommendations, and positive word of mouth. Consumer satisfaction with travel and transportation service components has also been proved to improve the traveler's subjective quality of life²³. Considering “*subjective quality of life*” to the perceived overall life satisfaction of the traveler²⁴.

Moreover, customer satisfaction and financial performance have been demonstrated to have a favorable association in studies²⁵. Customer satisfaction is a cornerstone of all marketing operations, according to Tam's analysis²⁶. Customers have also become a significant role in deciding the performance of the travel and transportation industry due to the severe rivalry among firms in the contemporary market, where customers have also grown increasingly aware of their importance to the companies. In other words, the industry's market leader is the firm with the highest client retention rate and growing customer base. Firms' success is dependent not only on discovering and predicting customers' needs and wishes, but also on meeting their expectations and criteria. While it is well known that customer experience is a diverse and hybrid experience, earlier research has focused mostly on the application of consumer satisfaction models in varied scenarios.

The purpose of this study is to examine how customer satisfaction is composed, and which could be in particular the possible antecedents of dissatisfaction in the travel and transportation industry. This study provides support to the idea that customer

²¹ (Vavra 1997; Pizam and Ellis 1999)

²² (Pizam and Milman 1993)

²³ (Mactavish, MacKay, Iwasaki and Betteridge 2007; Neal, Sirgy, and Uysal 1999)

²⁴ (Sirgy, Michalos, Ferris, Easterlin, Patrick and Pavot 2006)

²⁵ (Fornell et al., 1996).

²⁶ Tam (2012).

satisfaction must be a fundamental element of the business process. Moreover, the objective of this research is to provide empirical evidence that satisfaction among travel and transportation services is the result of careful consideration to each customer. Furthermore, the significance of technology and technology development for customer satisfaction will be examined. These aspects are crucial for nowadays marketing initiatives and solutions.

The scope of the review of this literature is both to use current findings in order to create a basic framework from which the current research will start, and also to identify a gap left by current studies, that has not been deeply investigated yet. In conclusion, this literature study highlights theoretical and empirical results related to the antecedents of customer satisfaction and its implication on the businesses welfare.

1.2 Discussion

As above mentioned, customer satisfaction is a well-established concept especially in marketing. Besides, customer satisfaction has been defined as the difference between a customer's prior expectations and his or her perception regarding the purchase²⁷. A judgment about a product or service feature provides a pleasurable level of consumption-related fulfillment, according to Oliver²⁸. Customer satisfaction, on the other hand, was described by Woodruff²⁹ as an overall good or negative sentiment about the net value of services received from a supplier. Further, Yi³⁰ explained customer satisfaction as the consumer's response to a perceived disparity between some comparison standards and the product's perceived performance.

Indeed, customer satisfaction is one of the most fundamental and vital aims of any firm. Satisfaction is defined by Howard and Sheth³¹ as “the buyer's cognitive condition of being sufficiently or inadequately rewarded for the sacrifice he has made”. Customer satisfaction, according to Rust and Oliver³² instead, is the degree to which a person believes that an encounter produces favorable sensations. Combining the different definitions provided above mentioned, the researcher of the current study

²⁷ (Oliver,1993)

²⁸ Oliver (1997)

²⁹ Woodruff (1997)

³⁰ Yi (1990)

³¹ Howard and Sheth (1969)

³² Rust and Oliver (1994)

defines customer satisfaction as “*customer’s feeling of pleasure or disappointment as a result of the evaluation of their prior expectation and the perceived performance*”.

Once analyzed the definition of “customer satisfaction” it is necessary to understand the antecedents and which factors characterize the structure of it. Consequently, by looking back to how customer satisfaction works, it is important to give attention to the delivery process of any good or service offered.

Therefore, in services setting, customer satisfaction is largely determined mainly by the service delivery process, highlighting the critical role of front-line staff. These employees are an important source of information for guiding the development of services based on customer wants, and they play a critical role in enhancing consumers' perceptions of value. This is also connected with the employee job satisfaction, and it is considered a crucial driver of obtaining customer satisfaction as well, since satisfied employees are more motivated, empowered, caring, and engaged to the firm's aims and consumer wishes. Many studies have looked at the links between service quality and customer happiness one by one, in keeping with the following ideas³³, employee job satisfaction and customer satisfaction³⁴ as well as job satisfaction and service quality³⁵.

According to other empirical data in the literature, service quality and its aspects, such as reliability, speed, responsiveness, value, empathy, service architecture, convenience service encounter, personnel service criteria, and customer focus, are antecedents of customer satisfaction³⁶.

As a result, past studies have discovered that customer satisfaction is influenced by service quality and perceived value³⁷. According to some studies, perceived value moderates the association between service quality and customer satisfaction, while Malik³⁸ asserts that perceived value is a mediating variable in the relationship between service quality and customer contentment.

³³ (Pantouvakis, 2010; Yap and Sweeney, 2007)

³⁴ (Hartline and Ferrell, 1996; Schneider and Bowen, 1985)

³⁵ (Snipes et al., 2005)

³⁶ (Oliver, 1993; Dabholkar, Shepherd, & Thorpe, 2000; Heung, Wong, & Qu, 2002; Sureshchandar et al., 2002; Ekinci, Dawes, & Massey, 2008; Lien & Kao, 2008; Awan, Bukhari, & Iqbal, 2011; Tan, 2014; Yuen & Thai, 2015).

³⁷ (Lai, 2004; Hu et al., 2009; Adeola & Adebisi, 2014).

³⁸ Malik (2012)

Further studies³⁹ affirm that personality factors, especially openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism have influence on customer satisfaction. Nonetheless, other research⁴⁰ claim that brand personality aspects like ruggedness, sophistication, competence, enthusiasm, sincerity, and brand experience and its dimensions-sensory, emotive, intellectual, and behavioral experiences-have an impact on customer pleasure.

As a result, the expectation-disconfirmation model implies that before purchasing a product, buyers shape expectations about it. Consequently, their initial expectation is compared with the actual performance. If the performance meets or surpasses their expectations, they are more likely to have a positive disconfirmation, indicating that customers are extremely pleased and will be more likely to purchase the same product again. In the opposite case, if actual performance falls short of expectations, they are more likely to earn a negative disconfirmation, indicating that customers are dissatisfied. Consumers are more inclined to hunt for alternate products for their next buy if they receive a negative disconfirmation.

It reflects how consumer feels when dealing with the service: low customer satisfaction leads to unfavorable reviews, whereas satisfied customers help you to build brand awareness.

Therefore, dissatisfaction is also part of the process. When products or services fail to fulfill the consumers' expectations, there is customer discontent. Customers will switch to another product or service as a result, undermining customer loyalty and confidence. Businesses regularly monitor consumer dissatisfaction because it can have a negative impact on the bottom line, generate a terrible reputation, and lead to a loss of client loyalty. Customers are more likely to recall unpleasant interactions with the company than favorable ones, therefore understanding customer dissatisfaction is critical. One of the most effective strategies to reduce customer unhappiness is to prevent it from occurring in the first place⁴¹.

One of the best methods to hit this point is to conduct consumer surveys⁴². After clients have purchased a product or service, follow ups to determine whether it is solving their

³⁹ Orth, Limon, and Rose (2010)

⁴⁰ Brakus et al. 2009

⁴¹ <https://blog.hubspot.com/service/customer-dissatisfaction>

⁴² <https://blog.hubspot.com/service/why-are-surveys-important>

specific pain points may be sent. Focus groups might be another way of exposing these shortcomings and gaining helpful input. As a matter of fact, reducing customer dissatisfaction through feedbacks, helps to anticipate and remedy causes of consumer avoidance. After all, how can a customer be unhappy with something that has already been taken care of?

Turning our attention again to how instead consumer satisfaction could be measured, there is another way to measure it, and this is by means of the service quality scale (SERVQUAL⁴³), as it is the most widely cited and utilized parameter⁴⁴ in the literature on service management nowadays. This model is based on the theory of disconfirmation of expectations and relies on the gap between the customer's expectations for a specific service and the evaluation of the customer's perception of the service. The SERVQUAL is a multidimensional strategy that incorporates assurance, empathy, reliability, responsiveness, and tangibles into its design. This points out how the service quality has a significant impact on client happiness, which leads to customer loyalty⁴⁵. Therefore, Law⁴⁶ defines satisfaction as an immediate response to service consumption; nevertheless, service quality is inferred as a company's overall image in the minds of customers.

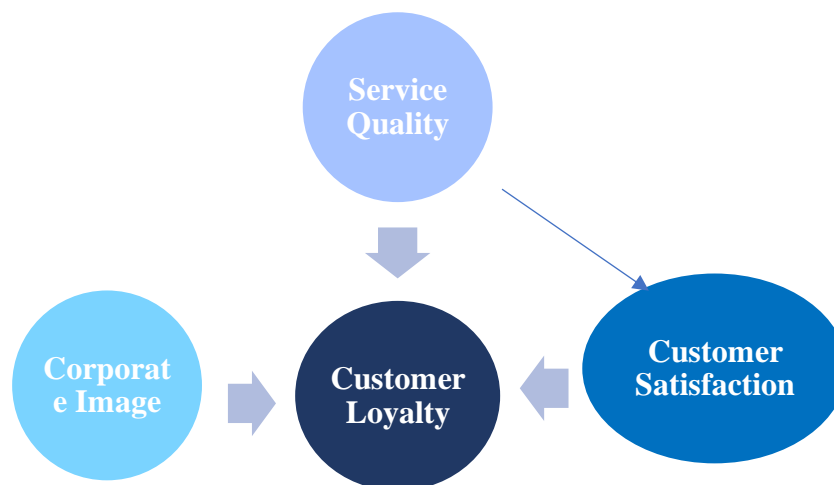


Figure 4: Relationship among Customer Satisfaction (always relating with Service Quality) and Customer Loyalty, given too by Corporate Image

⁴³ (Parasuraman, Zeithaml, & Berry, 1985, 1988),

⁴⁴ (Carman 1990, Saleh & Ryan., 1991; Atilgan et al., 2003; Martinez Caro & Martinez Garcia, 2008; Chand, 2010; Ryan & Cliff, 1997)

⁴⁵ (Clemes et al., 2008)

⁴⁶ Law (2017)

Furthermore, some academics regard the concepts of service quality and customer satisfaction to be interchangeable because they have a high degree of association⁴⁷. Others instead, have seen significant differences in customer satisfaction and service quality⁴⁸. Different opinions therefore have been depicted around the antecedents of service quality and customer satisfaction.

Customer satisfaction is besides essentially linked to the concept of value and pricing, according to Kotler and Levy⁴⁹, but service quality is linked to customer requirements and expectations. Cronin and Taylor⁵⁰ further defined service quality as having an impact on long-term attitudes and customer satisfaction because of the customer evaluating a specific experience.

Another recent study⁵¹, on the other hand, claims that service quality contributes to consumer satisfaction. In this scenario, service quality is regarded as the independent variable and customer satisfaction as the dependent variable. Although the debate has centered on the role of and causal relationship between service quality and customer satisfaction for many years, recent approaches argue for the benefits of combining the two hotly debated service elements into one⁵², stating that service quality dimensions should be measured alongside customer satisfaction. Because research shows that technical and functional features have a direct impact on perceived customer satisfaction, quality should not be judged as such.

Customer satisfaction is a constant in commercial exchanges, regardless of the firm's activity; in reality, achieving economic or social gains in the medium or long term is impossible if customers are not satisfied⁵³. Threatened by aggressive market competition and the new rules of the game that globalization has created in foreign trade, today's businesses must offer goods and services that meet the needs of their customers more than ever before to stay in business and become more competitive and effective⁵⁴. Therefore, customer expectations for business performance must be met⁵⁵:

⁴⁷ (Oliva et al., 1992).

⁴⁸ (Sureshchandar et al., 2002; Bitner and Hubbert, 1994)

⁴⁹ Kotler and Levy (1969)

⁵⁰ Cronin and Taylor (1994)

⁵¹ (Jamal and Naser, 2002; Ting, 2004; Parker and Mathews, 2001)

⁵² (Gronroos, 2001)

⁵³ (Bhatti et al., 2020)

⁵⁴ (Waseem-Ul-Hameed et al., 2018)

⁵⁵ (Gaspar et al., 2019)

smart businesses aim to delight their clients by making promises they can keep and then exceeding their expectations.

Customers who are dissatisfied will resort to the competitors and criticize the goods or service in front of others. Customer satisfaction, in this sense, is the key to customer retention; if customers are completely satisfied, they are more likely to become loyal customers of the company⁵⁶. According to extant studies⁵⁷, not only is the cost of developing a new customer is 5 times that of maintaining an old customer, but corporate profits increase as much as 25–85% with an increase of 5% in the customer retention rate⁵⁸. In addition, a strong corporate reputation is developed through customers' positive word-of-mouth recommendations, thus providing higher profits for the company's services or products⁵⁹.

As a matter of fact, according to a survey conducted by Accenture⁶⁰, dissatisfied customers are three times more likely than satisfied customers not to repurchase from the same retailer or brand again. Data such as these reveal the importance of focusing on improving customer experience and achieving customer satisfaction. While sales and market share data are presented as indicators of a company's current situation, customer satisfaction data are indicators of customers' propensity to continue purchasing in the future⁶¹.

1.3 Customer-centric and targeted services influence

In order to leverage consistent customer experiences and build true customer loyalty, it may be necessary to focus on the customer itself. Giving a personalized service to each customer not only enhance customer satisfaction but leads to loyalty and further to advocacy.

Nonetheless, customer understanding, is one of the key aspects that influence modern customer satisfaction. Indeed, customers prefer companies that provide a variety of options, remember their preferences, and tailor the purchasing experience for them.

⁵⁶ (Epaminonda et al., 2020)

⁵⁷ (Heskett, Sasser, & Schlesinger, 1997),

⁵⁸ (Reichheld & Sasser, 1990).

⁵⁹ (Reichheld, 1996)

⁶⁰ (Accenture, 2022)

⁶¹ (Pearson Education, 2010)

Customer understanding may be divided in different section that characterize customer satisfaction:

- **Choices:**

Having a few options for each product or service will go a long way. Varying characteristics might not seem like much, but the more options a customer has, the more they will feel they have power on the purchasing process. However, too many product choices may overwhelm customers and lead to “choice overload”, resulting in no purchases at all. It’s crucial to strike a balance between overwhelming choices and none.

- **Preferences:**

According to a Forbes story⁶² from 2018, online retailer Zappos is one of the most "customer-obsessed" businesses on the planet. Zappos is very aware of client preferences: if you want to speak with someone over the phone, they can immediately accommodate you. Businesses that remember and react to customer preferences such as payment method, delivery service, and communication channels have a strong grasp of the market they serve.

- **Personalization:**

Personalized service entails paying close attention to each customer. Employees that address customers by name and remember which products they like, are examples of how personalization may be included into the purchasing process. According to an Epsilon article⁶³, when a brand offers a tailored experience, 80% of consumers are more inclined to make a purchase (so personalization efforts are a worthwhile investment).

1.4 Technology influence in customer satisfaction

Another key aspect that affects customer satisfaction following the major trends⁶⁴ is technology. We are now in the period of the 5.0 technological revolution, which has

⁶² Forbes, 2018

⁶³ Epsilon, 2019

⁶⁴ IBM.com

resulted in a wide range of technology applications in a variety of industries, including banking, healthcare, retail, transportation, and so on⁶⁵.

It has become a necessary aspect of running a business in constant evolving world. As a matter of fact, technology readiness (TR), a personality attribute defined as "*the predisposition to embrace and use new technologies for completing goals*," determines how especially travelers use and enjoy technology⁶⁶. As a result, consumer attitudes about and adoption of technologies are influenced by their technological readiness⁶⁷. Factors such as social media, websites, blogs, and apps provide tech-savvy businesses an advantage over their competitors.

According to a blog post⁶⁸ from Access Development, research firm Apptentive discovered that 66 percent of businesses without a mobile app noticed a drop in clients. To please customers with technology, the channels of a company should be broadly available, simple to navigate, and promptly be able to load pages. Therefore, technology improvement is fundamental not only for better quality of service but for collecting and analyze data, improving day by day the service offered.

Customer service operations are being subjected to rapid, technology-driven change. The ubiquity and sophistication of new information technologies have fundamentally changed, and continue to change, how organizations interact with their customers, yet it has become no less crucial to firm performance⁶⁹. This movement away from face-to-face contact toward online and technology-mediated methods has implications both for selecting technologies and for managing personnel who provide customer service in these high-tech environments⁷⁰.

Information on customers, goods, and suppliers is now the most valuable resource for businesses. Because of the dynamic environment in which they operate, businesses must be able to acquire, merge, reconfigure, mobilize, and constantly grow technology resources. This will help them to achieve superior results⁷¹. One of the key goals of

⁶⁵ (Ostrowski, 2010)

⁶⁶ (Parasuraman 2000, 308)

⁶⁷ (e.g., Chen, Chen, and Chen 2009; Walczuch, Lemmink, and Streukens 2007).

⁶⁸ Access Development, 2021

⁶⁹ (El Sawy & Bowles, 1997; Parasuraman & Colby, 2001; Zeithaml, Parasuraman, & Malhotra, 2002; Burke, 2002; Piccoli, Brohman, Watson, & Parasuraman, 2004)

⁷⁰ (Delene & Lyth, 1989; Parasuraman & Colby, 2001; Ray, Muhanna, & Barney, 2005)

⁷¹ (Guisao et al., 2018)

information systems is to help businesses run more efficiently⁷². As a result, using technology enables for the most efficient use of resources and time⁷³. ICT in the business sector indicates that the present problem is to ensure that the opportunities provided by ICT contribute to an improvement in people's quality of life and wellness, as well as cost/benefit ratio optimization, while also promoting their development and progress⁷⁴. The cost and time reductions that ICT provides for businesses have been frequently reported in the literature; yet little emphasis has been paid to its impact on customer satisfaction⁷⁵.

According to other studies⁷⁶, strong customer satisfaction ratings are the best predictor of a company's future earnings. Previous research⁷⁷ suggests that technology enhances the positive impact of service recovery efforts on customer satisfaction, or that it acts as a moderator. Furthermore, technology-related key success factors (CSFs), which describe the total impression of customers of a product or service based on the consumer's whole experience with the firm, have the same impact on customer trust and satisfaction⁷⁸.



Figure 5: Summary of the steps of Firm Performance

Considering instead what Salesforce has published recently⁷⁹, CRM (customer relationship management) software automates processes for organizations to assure continuous collection of customer data to improve their services. The system also includes powerful tools for determining which lead generation channels are the most

⁷² (Grant and Yeo, 2019)

⁷³ (Hassa and Tanner, 2017).

⁷⁴ (Gaspar et al., 2019)

⁷⁵ (Cahyono et al., 2019)

⁷⁶ Jimenez et al. (2016),

⁷⁷ (Ruiz-Molina et al., 2020)

⁷⁸ (Tahir and Abdullah, 2014)

⁷⁹ Salesforce, 2021

effective ones. As a matter of fact, CRM can promote a consistent customer experience and customer satisfaction⁸⁰ in six main different ways:

1. Personalized service and communication

Rather than providing a uniform service to all consumers, CRM systems can help to deliver customized messages and emails to customers for a more personal experience. CRM also keeps track of consumer preferences and behaviors, allowing businesses to personalize services to specific customers.

2. Improved customer understanding

A CRM system is a central database that stores all customer information, including contact information, purchases, service requests, contracts, and more. Not only will this increase staff satisfaction because service reports will be able to respond to client complaints more quickly, but customers will also have a better overall experience. Another characteristic of CRM systems is the ability to save information about previous purchases, website visits, and social media inquiries. This increases pleasure because you become more aware of their likes and interests. Customized offers and services can be created based on a better understanding of the customer's preferences.

3. Strengthened customer relations

CRM solutions enable organizations to stay in touch with existing and potential consumers. You may ensure a positive customer experience even after they've exited your sales funnel by sending out regular emails informing them of new items, special deals, or promotional discounts. CRM software will also notify of important dates, such as customer birthdays.

4. Regular feedback collection and implementation

Hearing out customers on complaints, remarks, or suggestions is one of the criteria that ensures customer happiness. Each customer wants to know that their input is valued, and CRM systems may help you meet those expectations. It is possible to request feedback through CRM, and have it forwarded to the appropriate departments so they can work on enhancing client experiences.

⁸⁰ Salesforce, 2021

5. Deliver better customer service.

Customers anticipate consistent interactions across departments, according to 76% of customers. In 2020, 52% of customers anticipate offerings to be always tailored (up from 49% in 2019). Even the best product is only as good as the service that comes with it, and consistency has become the standard for quality service. When cross-functional departments have instant access to a customer's entire history, everyone can give individualized messages and solutions with the appropriate resources. Simply put, more pleasant interactions foster confidence and inspire customers to return.

6. Improve customer retention.

Teams can use visibility across all cross-functional interactions to proactively handle at-risk accounts and present satisfied customers with new options at the opportune time. It is possible to give more enjoyable buying and service experiences that keep people coming back for more with transparency into customer histories, ongoing campaigns, or open cases.

The below graph depicts a survey conducted by VentureBeat Report on March 2022, in which respondents have been asked about how much it is important for them the application of CRM services: as shown, more than the half of respondents affirm that is extremely important to them.

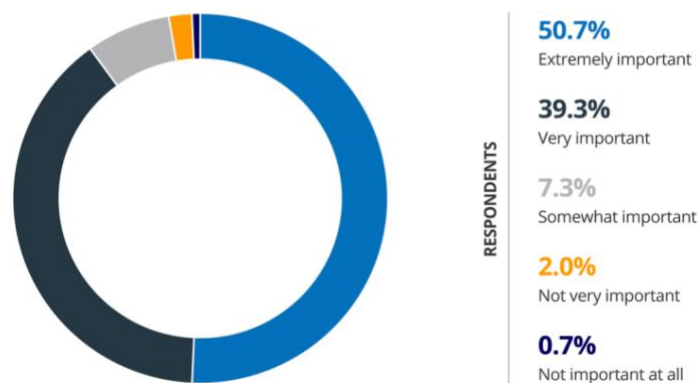


Figure 6: VentureBeat Report 2022: the importance of customer relationship management⁸¹

Another major trend of technology improvement is certainly AI applications. Research results back up the advantage of AI learning: A 2020 study⁸² found that companies

⁸¹ <https://venturebeat.com/2022/03/23/report-90-of-orgs-say-salesforces-crm-tools-help-them-achieve-success/>

⁸² Aberdeen Research

using AI capabilities achieve 3.5 times greater increase in customer satisfaction rates. As a matter of fact, AI can match consumers to agents based on their unique needs. “AI can extend this capability to predict emotion and intent to make the perfect match and discover the best opportunities for downstream automation” explains Traba⁸³ about this. This knowledge may be applied to provide a positive experience to clients who have never dealt with a customer support staff directly. AI assists the customer support journey in a variety of ways, including real-time conversation tracking, agent feedback, and applying intelligence to watch language, voice patterns, and psychographic profiles to predict future customer demands. However, the true potential of machine learning lies in its automation and AI's ability to learn on its own.

Once again, customer value obtained through technology improvement is the fundamental basis for marketing effort too⁸⁴. Porter⁸⁵ stated that a company's competitive advantage stems from its capacity to produce value for customers that exceeds the company's expenses of creation. Hence, delivering higher customer value through technology enhancement is considered fundamental to achieve and maintain competitive advantage.

In the figure below some of the data obtained by technology impact on each business are depicted: as observed, it enhances not only customer satisfaction (+40%) and retention (+39%), but company development (sales and ROI, respectively +32% and +40%) with an overall of company development acceleration of 55%.



Figure 7: Studies about Technology development implications, 2021⁸⁶

⁸³ <https://hdl.handle.net/2454/40286>

⁸⁴ (Holbrook, 1994, p. 22)

⁸⁵ Porter (1985)

⁸⁶ CRM, Salesforce

Despite all, existing literature has given no attention to the use of technologies and customer understanding and especially their effects on consumers satisfaction in the travel system. Indeed, most of the studies focus on the general concept of customer satisfaction, without underlining the importance of it in travel and transportation purchase decision.

2. THEORETICAL FRAMEWORK

In this first phase of the study, it is possible to get a broad picture of what the current research has already uncovered about customer satisfaction through the analysis performed. The literature review has depicted the customer satisfaction scenario, from the antecedents to dissatisfaction implications, from the role of customer personalization services to technology implications. Thus, reviewing the previous existing research, it has been fundamental to have a better comprehension of the customer satisfaction, in order to lay the groundwork for the subsequent analysis.

First and foremost, a gap in the literature will be found that, to the author's knowledge, has not been addressed by any current research. To investigate the gap left by literature, three research topics will be developed, which will serve as the study's focal point, which have been established based on what is known from the available literature.

2.1 Emerged Gap from the literature

The review of existing literature has highlighted many aspects of the role that technology can play for customer satisfaction implications and how much customer satisfaction is correlated to customer understanding. Based on available studies, technology applications and development, as well as tailored services, are two of the most important factors influencing consumer purchase behavior. These aspects of customer satisfaction represent nowadays, the pillars of the whole literature.

Although, as analyzed in the Chapter 1, railway industry is one of the most profitable industries on the Italian market, in the literature observed, attention is not given to this particular transportation field.

Since the travel and transportation industry, as described, is built on rigorous competition, where the initial move is crucial, customer satisfaction issues are expected to be given a high priority. Even though various studies have emphasized the importance of customer satisfaction, there are no studies examining the influence of the above-mentioned aspects in this market.

Furthermore, no research has been done on client purchasing intentions in the railway industry. The current research has only looked at the antecedents of customers that are satisfied or dissatisfied with a service and their sensitivity to price fluctuations⁸⁷.

Thus, literature has mainly analyzed the consequences of customer satisfaction or dissatisfaction, but not the antecedents in this particular industry.

The present research proposes to fill the gap, emerged from the literature. Aim of this study is thus to analyze in the railway environment, which aspects of customer satisfaction can lead to customer retention.

The previous studies have been fundamental to build the basis for the application of the main factors on the railway industry. Therefore, the aspects analyzed in the literature can be developed in the same way to every different industry, in this case in the railway one.

One of these factors that this current study purposes is to analyze the influence of technologies on customer satisfaction and increase of customer retention due to technological development. In this line, customer understanding, and personalized services are the new frontier of technology improvement, the more a customer has targeted services, the more customers are satisfied. This positive correlation is the main aim of this research.

The following section of the investigation will address these concerns. In order to do so, it's first required to better define the problems that the study aims to solve: by evaluating the phenomenon, it will be possible to depict the research's main question and draw the following findings answers.

⁸⁷ Tandfonline.com, 2020

2.2 Research designs development

The knowledge gained from the literature review enables for the formulation of conclusions concerning the central phenomenon being investigated in this study.

The study will be conducted by the means of some questions on how technology affects customer satisfaction, on how to improve consumer comprehension, and how customer retention is affected by customer pleasure. As a matter of fact, to answer these questions, a further research methodology is going to be conducted to analyze customer intentions regarding the questions themselves.

The research will take into consideration in particular the railway sector in Italy, in which customer satisfaction plays a crucial role for competitive advantage. This because the market rivalry is fierce and strict to two main competitors for passengers' transportation.

Given the competitive business environment in which railway systems operate, retaining customers is as important to railway companies as the acquisition of new customers. Customers must be retained to ensure market success, and both industry and researchers have looked for strategies to do this. Consequently, improving client satisfaction has emerged as one of the most important answers.

In order to overcome the competition, it is important to rely on a competitive advantage⁸⁸. But to build and preserve of long-term competitive advantages, it is not enough that companies are just better and faster than their competitors. Competitive advantage strategy, without aim for customers' satisfaction may lead company to "Cul-de-sac". Knowledge about customer needs and desires and the technological improvement can help businesses to create their own competitive advantage. As a matter of fact, technological innovations can have important strategic implications for individual businesses and can greatly influence industries as a whole⁸⁹.

These elements are fundamental for customer satisfaction, becoming key elements of the process of building competitive advantages. Improving customer experience is nowadays a notion that encompasses everything, from service quality to how well items fit into their lives. Because quality improvement plays a significant part in the supply of services, the relationship between the quality of a service supplied and

⁸⁸ Porter, 1985

⁸⁹ Journal of Business Strategy, Vol. 5 No. 3, pp. 60-78.

customer satisfaction is quite close. The key issue is determining customer satisfaction attributes, as what is satisfactory for one person may not be for another⁹⁰.

The present study aims to confirm the idea that customer satisfaction can influence customers' choices, when it comes to benefit from a service, and that technology applications and targeted services may influence this effect.

Everything here expressed to this point, allows to elaborate following research questions for empirical contrasting: according to a significant body of research, customer satisfaction influences consumers' perceptions and preferences of travel options. Consumers might acquire distinct attitudes and customer retention for a given service based on the pricing, ease of use, and personalized care. Because the literature has placed a high value on the application of technology to services, it is reasonable to assume that this will have a beneficial impact on potential consumers' contentment.

As a result, the initial question will be:

- *Does technology development enhance customer satisfaction?*

As previously said, given the increased focus on technology's application to services, it is reasonable to believe that technological advancements will influence customer choice. However, if the younger generation is concerned about this issue, it is unclear what the middle and older generations think. As a result, it is impossible to predict whether technological advancements will have a positive or bad impact, but it is conceivable to infer that they will have an impact, transferring satisfaction to a further step and vision.

Taking technology into account, there are a plethora of ways to develop and deliver these experiences. According to studies, only one unpleasant experience with a firm is enough to make many of us never give them their business again. Research⁹¹ holds the belief that satisfied and dissatisfied passengers' views spread rapidly through digital media, with satisfied passengers' perceived value, value for the organization's image and effect on reputation and customers increasing profitability, and dissatisfied customers destroying the organization's image, money, and passengers' satisfaction⁹².

⁹⁰ (Batista and Medeiros, 2014)

⁹¹ (Prentice et al., 2017)

⁹² (Rajaguru, 2016).

As society changes to a more service-driven economy, where customer lifetime value becomes more important, we will see increased investment in technologies that improve experiences and earn trust year after year. The innovation of technology in its various forms, from automation and AI to digitalization of information, has been completely infused with people's life in its different aspects⁹³: private, work, and social life.

Technology and data-driven, always-online world means deeper, sometimes real-time, connections to customers. As a matter of fact, European Union has declared that AI is a “*system that shows intelligent behaviour analysing the environment and taking decisions with different grades of autonomy to overcome the specific objectives*”⁹⁴.

Secondly, as mentioned above, technology development may lead to more targeted services thanks to data collection of each customer. This new frontier of businesses is fundamental for any business life. Besides, increased levels of personalization will be a strong trend of the next years, with organizations grappling with the idea of leveraging technology to build tighter, more individualized relationships with their customers at scale. Over the next years, one of the influent topics in customization will be the possibility to detect and act on "micro-moments": selling opportunities that can last only a few seconds but can be extremely profitable for businesses who know how to spot and capitalize on them at scale.

Moreover, these micro-moments can occur when a customer goes online with the intention of making a purchase or simply to learn more about a subject, such as what tool they will need to complete a task. Brands will invest extensively in techniques to recognize and utilize these moments in the next years, determining the best time to make a customized offer that will help solve whatever problem the potential client is experiencing at the time. As a result, the study will investigate the effects of individualized services on the desire to purchase them.

Therefore, the second research question might be depicted as:

- *Does technology drive towards customer understanding?*

⁹³ Taylor & Francis. 2022

⁹⁴ Maurizio Carvelli and Giulio Sapelli 2019

In fact, for organizations looking to set themselves apart from the competition, providing a great customer experience is quickly becoming a top concern. Right now, brands are putting a lot of emphasis on customer experience, partially because they know that people will pay more for outstanding and targeted experiences.

Another important factor is that customers understand that part of the process is creating trust, and customers who trust businesses are far more eager to reveal their personal information. Trust is a crucial component of the process, and it is clear proof of a successful customer-centric approach.

Finally, the study will investigate whether customer contentment and positive affirmations have an impact on customers' propensity to utilize a given service again. As a result, the third research question will have the following shape:

- *Is customer retention a consequence of customer satisfaction?*

Customer satisfaction is a primary predictor of customer loyalty⁹⁵ in the travel and transportation industry because satisfied customers are more likely to recommend services to others, which is the cheapest and most effective form of marketing and promotion through positive word of mouth, as well as the development of long-term loyalty to the company's services. As a result, businesses should strive for higher levels of customer satisfaction in order to drive favorable post-purchase consumer behavior⁹⁶, resulting in more loyal customers.

According to what expressed until now, the “importance of technology applications” and “importance of targeted services” may be defined as the main variables of this research. These factors are, in fact, the key phenomenon that this study will investigate. Using two factors (*Importance of technology applications* and *Importance of targeted services*) investigated in the literature review above, a perceptual map has been created to have four overall segments correlating to them. Each axis represents the factor's value from low to high. The four segments that have been depicted are: conscious about technology and customer attention, conscious about technology, conscious about customer attention, not conscious about both factors. The map is shown below.

⁹⁵ (Masoomeh, 2006)

⁹⁶ (Yoon & Uysal, 2005)

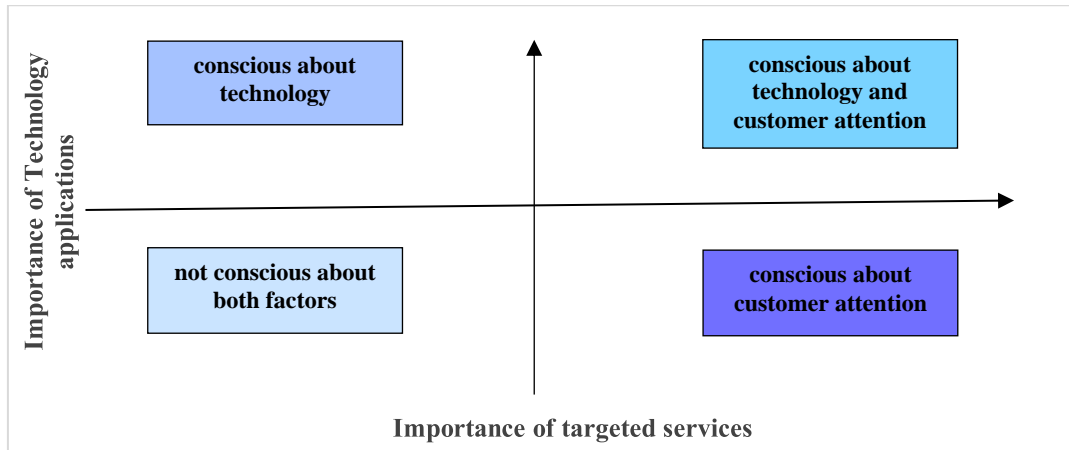


Figure 8: Perceptual map of gap analysis

The four segments depicted above represent the customer satisfaction analysis according to the survey presented. The “not conscious about both factors” segment represents customer dissatisfaction: when both the segments that have been accounted with most correlation lack, customer dissatisfaction may arise. While the segments “conscious about technology” and “conscious about customer attention”, are focusing on taking advantage of one of the two factors, making the customer seeker of new perspectives. Therefore, the right gap or segment in which companies should focus on is the fourth: “conscious about technology and customer attention”. This segment may identify the frontier of the new solution of customer experience, bringing to satisfaction of customers and retention, fundamental for nowadays business plan.

As a matter of fact, there is a clear need for targeted customer satisfaction services that enables companies to reach their potential customers: a clear structure that provides customer-friendly usage, as well as easily understandable. To create a service that offers these attributes and reaches many potential customers, the application of technologies and AI algorithms to target the most personal service to the customer is fundamental.

In conclusion, in a world in which everything is simplified, the research of uniqueness is becoming rarer and rarer. It is important to understand each single customer to collect higher consumer satisfaction and therefore a more unique customer experience. Any business's survival depends on its relationship with its consumers, and customer satisfaction plays a critical role in recruiting and retaining customers. The identification of antecedents of customer satisfaction is essential for a firm to be

successful and achieve a competitive edge. Thus, this study attempts to focus on key antecedents of customer satisfaction, to better implement it in the travel and transportation industry (focusing on railway systems) in Italy, proposing a service that may fulfill the above-mentioned gap. This latter will be overcome by a service that gives attention to both technology and targeted services.

CHAPTER THREE

The initial section of the study establishes the structure and context for the subsequent research. The goal of this section is to fill in the gaps left by existing literature by responding to the fundamental questions that have been posed.

The goal of this study is to add, by examining the literature, a new facet of customer satisfaction in the railway business. Specifically, how technology and customer attention influence customer satisfaction and, as a result, the decision to use one service over another.

In order to accomplish so, a study was conducted to see how consumers react in various scenarios and preferences. The next chapter will go into how the analysis was carried out in detail, as well as the main findings and implications for the future.

3.1 Research Methodology

The research process follows the logical sequence specified in the three research designs. In order to analyze how customers react in the railway environment, a survey with potential consumers has been run.

As for the investigation methodology, the present research refers to a survey that analyzes a current phenomenon within its setting using a questionnaire. In terms of research approach, the study is characterized as quantitative research since it uses correlation analysis to assess the sensitivity of respondents towards the given attribute.

The proposed work follows a similar structure to the one reported by Eboli and Mazzulla⁹⁷, in which users' perceptions are expressed in terms of satisfaction. In fact, the survey has been structured to include a synthetic signal based on user perceptions and expectations, stated in terms of satisfaction and importance rates. This research aims to provide metrics for expressing total service quality and to suggest better the antecedents of the latent endogenous variable that represents customer satisfaction.

Therefore, a [Google Survey](#) was conducted using Kano's proposed framework⁹⁸, based on functional and dysfunctional questions, which was then customized to the environment. It has been divided into three parts: the first part to identify the user

⁹⁷ Eboli and Mazzulla (2012)

⁹⁸ Kano et al. (1984)

profile for the services; the second part to contain seven statements that sought to assess customer satisfaction if a given attribute is considered; the third to contain five functional questions that sought to evaluate customer satisfaction if a given attribute was present. A scale ranging from 1 to 5 points, referring to how customers feel about the service offered, was employed to aid the respondents' understanding (please see Appendix for a summary of the entire Survey).

The needs are identified by the features that the model presents⁹⁹, according to the users' experiences. Anyway, reverse attributes which are customer-identified features have been applied to the survey, that, when present in the provision of a service, cause unhappiness and, when absent, can affect satisfaction.

The survey has been taken on a population of 152 respondents, taken from travelers and exploiters of train services: The range of ages of respondents were 58,3% from 30-59, 29,8% from 16-23 and the other segments were equally distributed. Of the 152 individuals who provided gender information, they were equally distributed. Most of the individuals who completed the questionnaires were average travelers (41,2% of the population). By analyzing their frequency of journeys and exploitation of services, various statements and questions have been presented to the population. The table below shows the demographic data of the population.

<i>Gender</i>	<i>Male</i>	67	43,9%
	<i>Female</i>	82	54,4%
<i>Age</i>	<i>16-23</i>	48	29,8%
	<i>24-29</i>	17	11,4%
	<i>30-59</i>	70	58,3%
	<i>>60</i>	16	10,5%
<i>Frequency of travel</i>	<i>1 (never)</i>	18	12,3%
	<i>2 (rarely)</i>	21	14%
	<i>3 (sometimes)</i>	63	41,2%

⁹⁹ (Barreda et al., 2016; Mwesiumo and Halpern, 2018)

	<i>4 (often)</i>	<i>33</i>	<i>21,9%</i>
	<i>5 (very usually)</i>	<i>14</i>	<i>10,5%</i>
<i>Motives of travelling</i>	<i>Work</i>	<i>36</i>	<i>23,9%</i>
	<i>Trip</i>	<i>51</i>	<i>33,6%</i>
	<i>Leisure</i>	<i>53</i>	<i>35,4%</i>
	<i>Other</i>	<i>11</i>	<i>7,1%</i>
<i>Take advantage of additional services</i>	<i>Yes</i>	<i>126</i>	<i>83,3%</i>
	<i>No</i>	<i>25</i>	<i>16,7%</i>

Table 2: Summary of respondents' demographic (N=152)

According to behavioral and psychographic questions, it has been asked “Which services do you prefer?” and “Which is the first thought that you associate with customer experience?”. Taking into consideration the latter in the graph below, it is clearly notable that customer attention and quality of series are a must for every business. As a matter of fact, the opinion of customers is the most objective opinion to rely on.

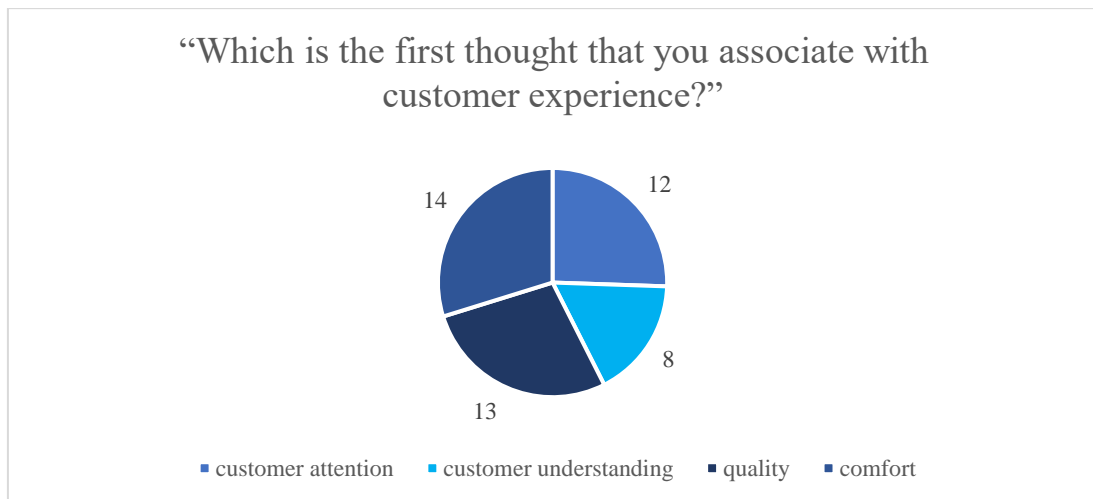


Figure 9: Customer experience association for customers

Moreover, the results of the survey, make it clear that many people are aware of the importance of technology for a better user experience: 50% of the population of the survey has rated the statement of great importance. Therefore, technology and AI integration (to better target the customers) are the two most relevant factors accounted.

As already depicted in the research, technology has really great impact on customer journey of travelers.

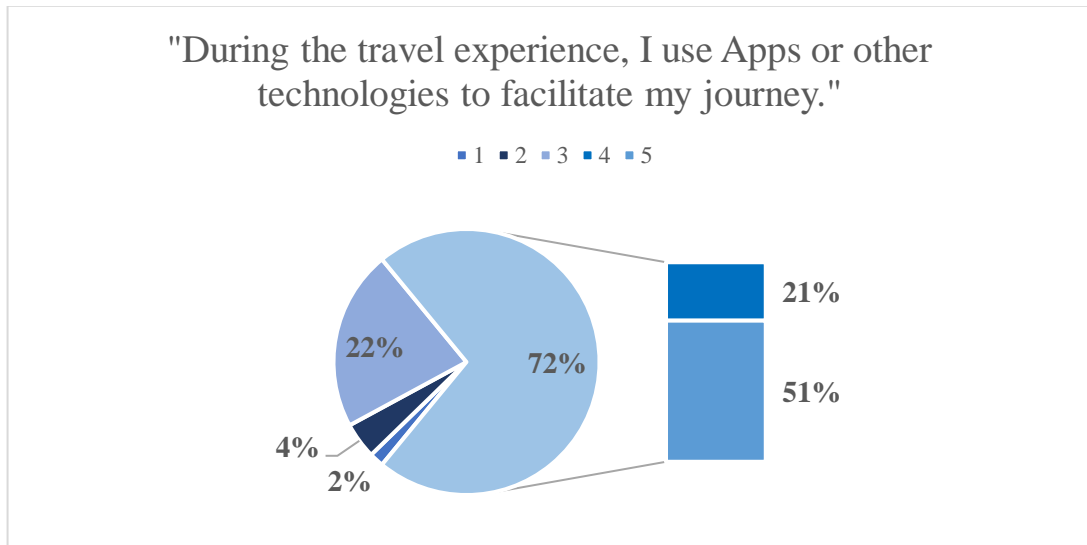


Figure 10: Technology application influence on respondents

The survey also shows how customers will exploit the service repeatedly if it has satisfied them (84.8% of the population has confirmed the statement¹⁰⁰). Therefore, as the third research question has depicted, customer retention and loyalty are a consequence of customer satisfaction. It is clear from research that these elements have a positive correlation: once increasing one it increases the other.

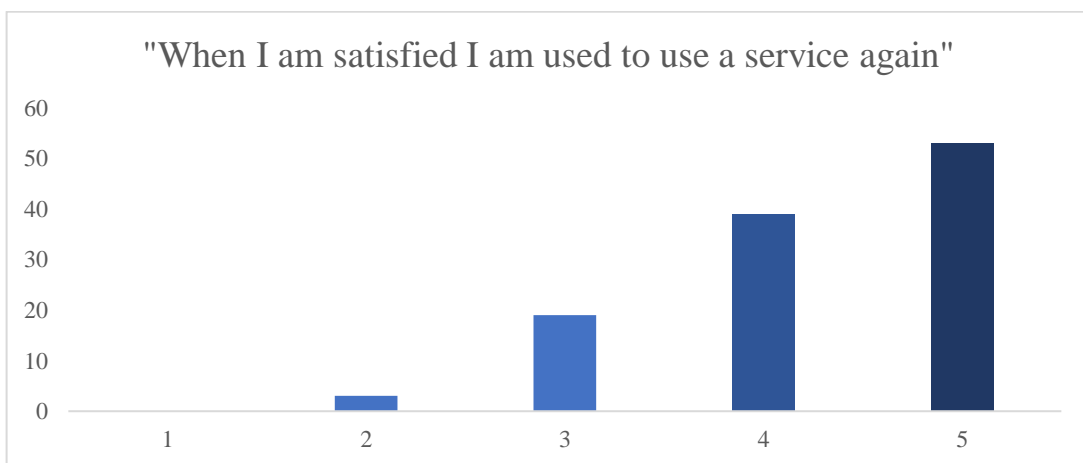


Figure 11: Customer retention is a consequence of customer satisfaction

The issue is that many customers struggle to discover a solution that is tailored to their needs. As a result, only a small percentage of people profit from existing services, and

¹⁰⁰ Emerald.com. 2022

even fewer people use them on a regular basis, despite their willingness to do so. Customer satisfaction is noteworthy in the travel and transportation business because it has consequences for customer loyalty's long-term sustainability.

Although the direct effect of service quality on behavioral intention is considerable, the indirect effect (with pleasure serving as a mediating factor) is a bigger driver of behavioral intention in the context of the service factory, according to the researchers¹⁰¹. As a result, the main consequence of satisfaction is loyalty¹⁰². Customer loyalty is a metric that quantifies the level of commitment based on obligation or consumer choices, as well as the level of satisfaction. Customer satisfaction has substantial management consequences; thus, the fundamental result of customer happiness is loyalty, which manifests itself in repeated purchase behavior, readiness to pay a higher price, willingness to suggest the service to others¹⁰³, and a growth in brand equity.

Despite all the previous considerations, the 62.5% of the population has underlined how much customer experience is fundamental for each business and how customer attention may be the solution to satisfy customers. Moreover, it has emerged that interviewers find that customer experiences targeted for the single customer has great importance on the decision of the journey (50% of the total population of the survey). As highlighted by the second research question of this study, customers give relevant importance to the personalized and targeted service.

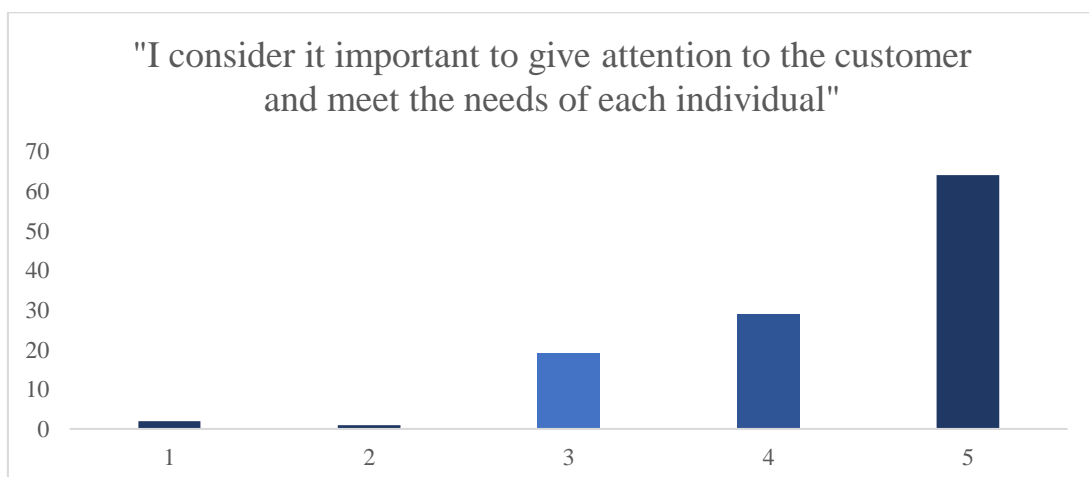


Figure 12: Importance of targeted services

¹⁰¹ Olorunniwo *et al.* (2006)

¹⁰² (Chi & Qu, 2008; Yoon & Uysal, 2005)

¹⁰³ (Baker & Crompton, 2000; Bigne *et al.*, 2005; Yoon & Uysal, 2005)

In addition, the 75,8 % (from quite to usually) of the population affirms that a service able to satisfy their needs may affect the journey choice. This, as a matter of fact, is the central implication of the research and answer to the questions. Customers are highly influenced by customer satisfaction: as long as it is concerned, the survival of any business depends on the customers willingness to purchase its good and services. Customer satisfaction then, is fundamental for every business welfare.

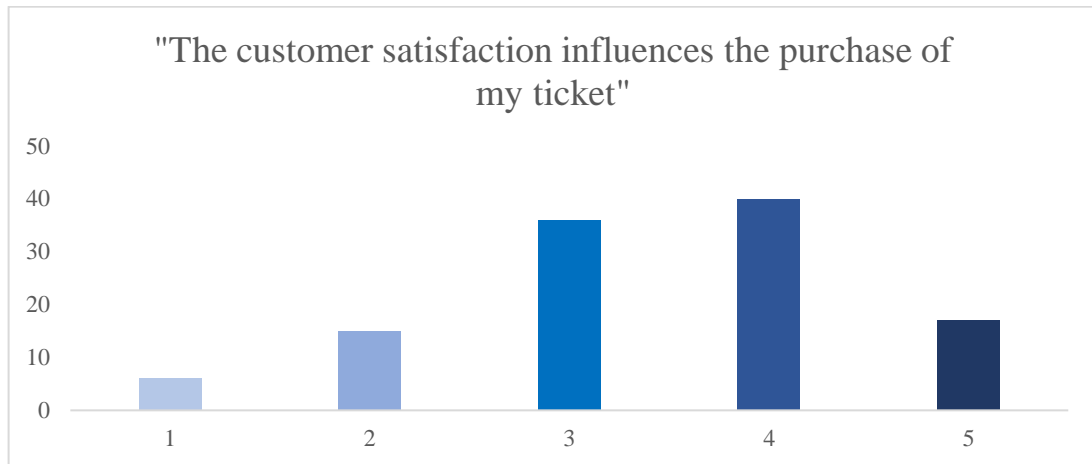


Figure 13: Customer satisfaction influence on customers willingness to pay

Thirdly, according to functional questions, 5 different statements have been presented, conceiving the intention to agree or disagree to the specific statements. These questions were intended to confirm the statements already reported above. The first question is sought to be the most significant one since it encloses the focus of the whole research. According to respondents, to the question “According to you, is it fundamental for businesses to focus on customer experience?”, the respondents have confirmed that it is of great importance: more than 61% of the respondents have ranked of major importance the customer experience.

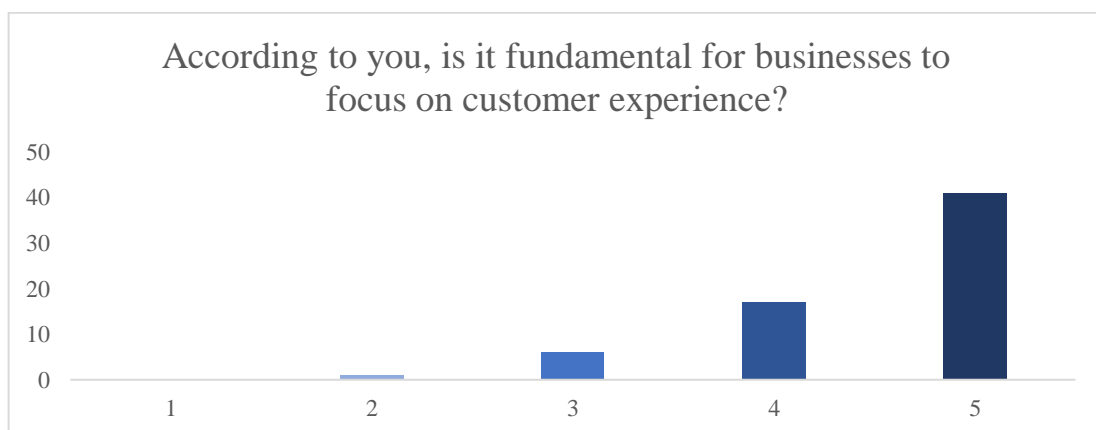


Figure 14: Customer experience influence for customers

Moreover, it has been appointed how much respondents use additional solutions to increment their experience during their travels. Statistics have underlined that not every respondent is used to taking advantage of additional services during journeys.

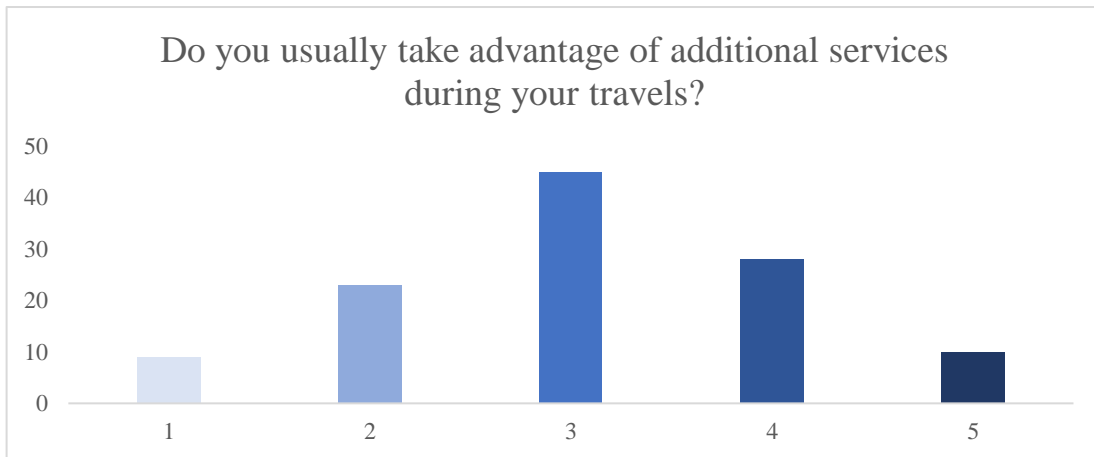


Figure 15: Additional solutions usage of respondents

This clearly is a focal point that must be evaluated: customers use additional services only if are satisfied about it. Once a customer is satisfied, it is more willing to enjoy of the same solution repeatedly. As a matter of fact, the third question depicts, the influence of an additional service to your decision of travel. Whether by car, by train or by a different railway company, a service that satisfy customers may affect the customer decision. As shown below, the graph reflects that it is increasingly important this aspect of customer satisfaction.

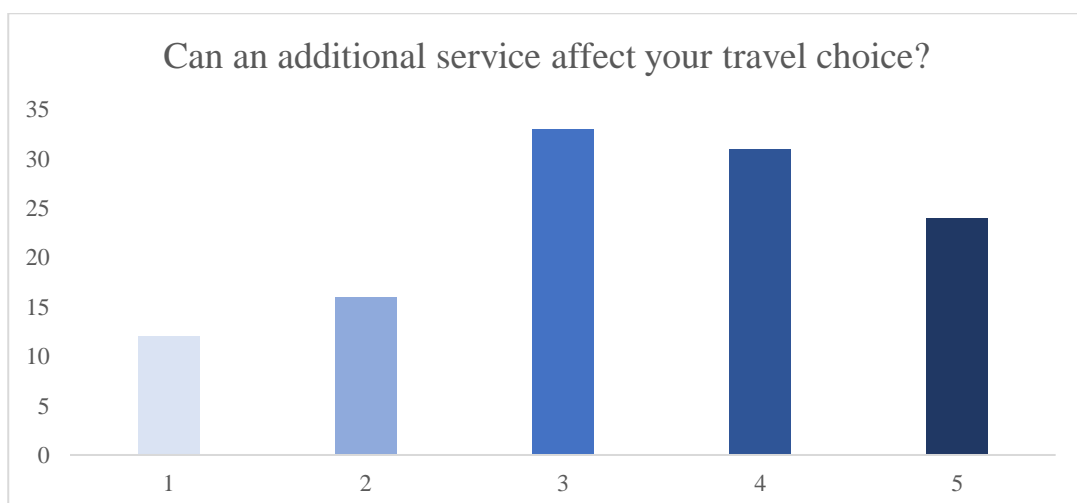


Figure 16: Influence of Customer satisfaction on travel choice

Therefore, it is of clear evidence that customer satisfaction is beneficial for each solution of businesses. Customer care, according to what data explicit, is way one of

the factors that affect customer choice while choosing a specific solution, as depicted in the graph below.

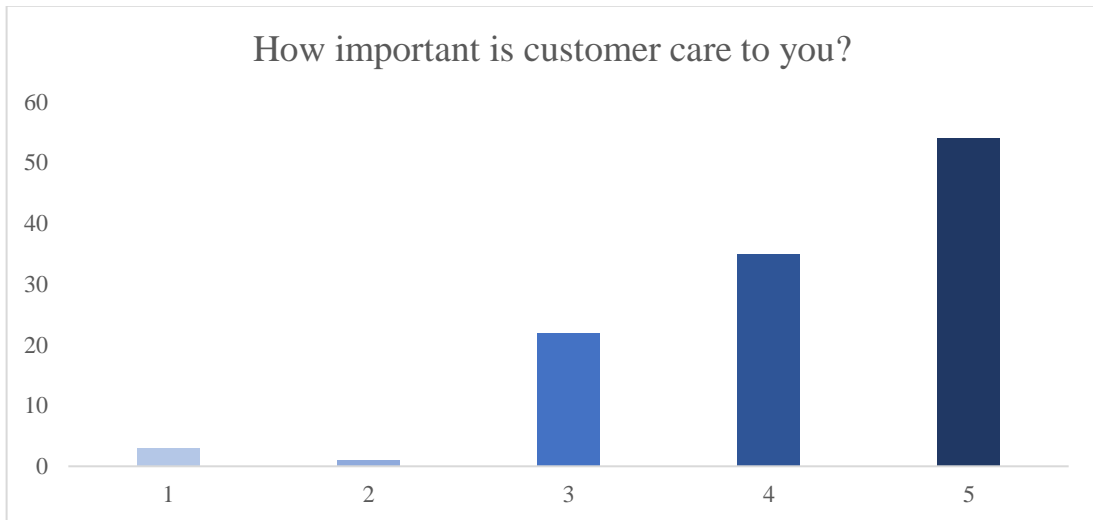


Figure 17: Customer Care significance for respondents

Last but not least, respondents have been asked if technology application may implement the travel experience of each customer. Alongside with the research analyzed, the data clearly shows how much technology is fundamental and can improve substantially the customer experience. Through technology application businesses may address solutions or services towards customer understanding and therefore toward solutions aimed to personalized services.

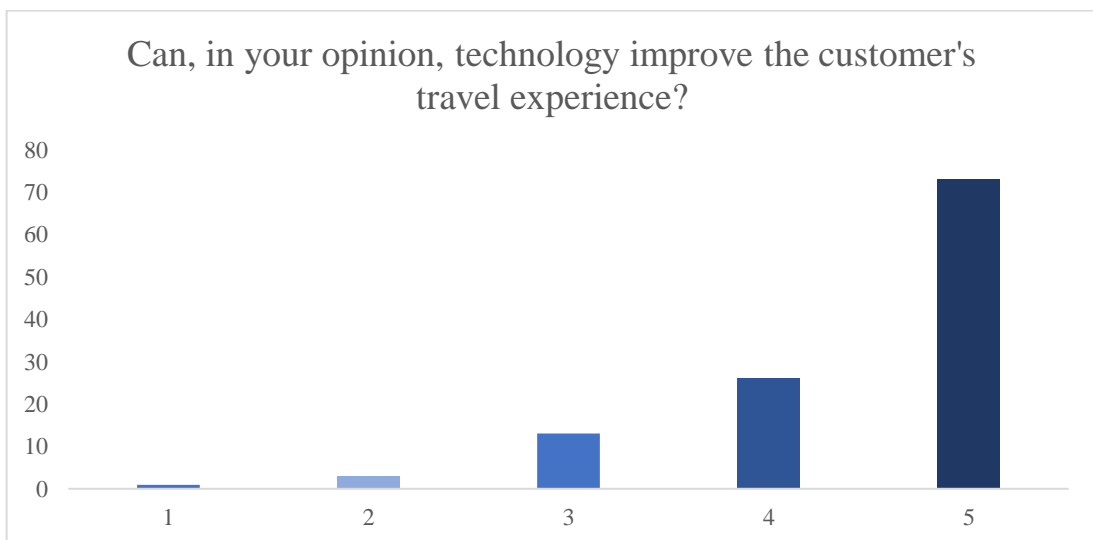


Figure 18: Technology application on customer experience

3.2 Conjoint Analysis

In order to testify the reliability of the data collected, a conjoint analysis¹⁰⁴ is taken into account. In the data collection stage, after obtaining data on respondents' preferences for a carefully selected set of bundles, to analyze the data observed, this analytical tool has been accounted.

Conjoint analysis finds patterns with the rank order data: it identifies the customers relative importance of attributes and utility of attributes.

In order to indicate their degree of preference for each bundle, this evaluation process forces respondents to make judgements of statements, rating them from 1 to 5. The technique focuses on determining the customer's preferences for the benefits deriving from the service's specific features. This measurement does not include a direct evaluation of the importance of the qualities and attribute levels, unlike traditional segmentation processes.

Conjoint analysis is a type of micro measuring. Because preferences at the attribute level are measured individually, the researcher may quickly determine whether preferences are homogeneous or heterogeneous. The study begins with a set of customer-provided global evaluations of a set of complex options. Conjoint analysis allows for the decomposition of such global evaluations into separate and compatible utility scales corresponding to each attribute, allowing for the appropriate recreation of the original global evaluations (or other evaluations involving a new combination of the attribute specific features).

In using conjoint analysis, several statements are taken into consideration, regarding different attributes and each respondent is obliged to choose among different preferences, creating a situation of "trade-off". Nonetheless, conjoint analysis finds the overall optimal levels of the statements, focusing on the correlation among the selected statements taken into consideration.

Based on the participants' responses, these calculations have been carried out through the statistical analysis tool Excel to understand which factors accounted the most in the correlation of customers' responses. Conjoint Analysis was used to assess the 7 statements aligned to the first section of the survey conducted (see the Appendix for a

¹⁰⁴ Boris Durisin (2021), professor of Marketing of Innovations

complete overview) and determine the three main factors. The cumulative variance of the factors was not of importance for this goal.

		Ratings				
		1	2	3	4	5
Statements	1	11,20%	17,20%	24,10%	12,10%	35,30%
	2	2,6%%	4,30%	21,60%	21,60%	50%
	3	7,00%	20,90%	38,30%	20,90%	13%
	4	6,10%	13%	31,30%	34,80%	14,80%
	5	1,70%	1%	16,40%	25%	56%
	6	26,70%	28,40%	23,30%	11,20%	10,30%
	7	0%	2,60%	16,40%	35,30%	45,70%

Table 3: Ratings considered for every statement respectively

Taking into consideration the 7 statements' ratings from 1 to 5, the correlation of the sample has been carried out, resulting to identify the three statements that express higher correlation and therefore, are more relevant for the study analysis. If correlation is high consequently highlights the importance of statements. Since statements are rated from 1 (no importance) to 5 (of great importance), the more it is positively correlated the more it is important for customers.

Correlation among statements and ratings	0,68267683
	0,93499358
	0,1611489
	0,49946236
	0,93053294
	-0,9161321
	0,9779539

Table 4: Correlation of customer responses

By looking at the statements with the highest correlation regarding each factor, it is possible to define them. Factor 1 is defined as "Importance of technology applications" and Factor 2 is defined as "Importance of targeted services". Below, the most significant statements that led to those definitions are being shown. Moreover, the population has given significant evidence to the role of technologies as major trend of the new customer experience. The third and most correlated statement is given by customer retention to a satisfying service. As a result, the following data clearly support the study until now arranged. As a matter of fact, the third research question evidently highlights the link among customer satisfaction and retention of customers.

As far as it may concern, the most relevant statements considered by customers, are the factors appointed in the three research questions of the previous study. As a matter of fact, considering the research already highlighted, the analysis has respectively depicted the three research questions accounted before. This convergency between studies and data analysis, is a clear example of the reliability of the study.

3.3 Discussion

The survey results were thoroughly evaluated in the previous section through reliability and conjoint analysis to ensure that the data were accurate. At this point, practical findings will be drawn to provide an answer to the research's fundamental questions. As a result, the current part will discuss the findings and explain which managerial implications might be drawn from them. Finally, the limits of this study will be discussed, as well as the gaps that remain to be filled by future research.

3.3.1 Results Discussion

The conjoint analysis has shown the most important factors that respondents have accounted as more important than the others. As a matter of fact, this analysis reflects the sensitivity of respondents to that given output or service.

As seen, the first analysis reported a significant effect on technology implication for customer satisfaction. This means that the first research question "*Does technology development enhance customer satisfaction?*" is answered. The survey performed with the sample of customers confirmed also for the travel and transportation environment is the same as what has been underlined in the literature written on the argument. As a matter of fact, the conjoint analysis has underlined the importance that respondents have given to this factor particularly.

For what the second research question is concerned: "*Does technology drive towards customer understanding?*", also in this case the data reported a substantial effect of customers towards this issue.

The level of significance depicted both in the conjoint analysis and in the results of the survey allow us to consider it as valid and, thus, the research question can be assumed and confirmed by the survey and by the correlation analysis which has clearly identified this factor as one of the most relevant ones. In the survey described above, different were the questions and statements that have been asked to respondents, in

which every respondent has been affected positively and coherently to the study proposed before.

Thirdly, the research question “*Is customer retention a consequence of customer satisfaction?*” is thus, taken in consideration too.

When the effect of those two elements is combined and it leads to a customer to be satisfied, customer retention is the major effect of customer satisfaction, as clearly depicted by the results of the survey.

Even if customers are considered to be, as the survey highlights, mostly attracted by the fact of travelling alongside with other people, as shown in the statement number 3 of the Survey 1, respondents are not too much inclined to socialize during the travel experience. This may contrast with all the study concerns, since its aim is to take evidence how much these technologies may lead to customer understanding and therefore customer retention.

Some of the respondents have also expressed their first thought that associates with customer satisfaction. Respondents have associated customer satisfaction with “*comfort*”, or “*customer understanding*”. Other participants said it could be associated to “*quality of services*” or “*customer attention*”.

The majority of comments have been, thus, referred to customer attention, reliability and quality of services. None of the comments therefore have been about technology implementation of services, even if nowadays the development of services and the quality are a consequence of technology development.

Therefore, respondents are not conscious about the technology services that allow the functioning of the entire business system and the development of better solutions for the customers. Regarding the services that respondents have underlined as their favorites during travel, respondents have commented “*Selection of seats*”, “*Wi-Fi*”, “*Priority Solution*” or “*Meal selection*”. Out of 152 respondents, the service selection that has accounted the most is the seats selection during the travel. This service is considered by respondents mostly the only one for which customers are willing to buy an additional solution, by the way.

3.3.2 Managerial Implications

The present study has confirmed the important role attributed by the existing literature technology applications that can make a unique customer experience, especially in the travel and transportation environment. In the railway industry, recreated in the survey, respondents resulted to be more affected by technology application leading to quality enhancement. This confirms the research question that the technology has great impact on customer satisfaction in a positive way. Technology application influences customers towards a better-quality service concept. Thus, has significant influence on customer satisfaction and customer loyalty consequently.

Moreover, having a closer attention to customers, as resulted from the literature and subsequently from the survey analysis, is accounted as one of the fundamental factors that lead to customer satisfaction. The effect on the purchase intention of customers to take advantage of a specific solution is highly affected on how much a service is targeted. By using the technology applications such as Artificial Intelligence, companies may focus better on the customer needs and address services really targeted on each one of them.

This solution may affect both the companies involved and the end user itself too positively. Moreover, offering such a service not only enhances customer satisfaction, but boosts brand loyalty and reliability, enhancing the brand image as a “customer caring” company. Creating targeted services through the exploitation of technologies applications, thus, is the aspect on which companies need to pay more attention to.

This will also allow to influence the word-of-mouth. What counts, indeed, is not only the impact on customers that are currently using the specific service or solution, but also attracts other potential customers. As seen from the literature, users’ opinion is what influence customers choice more than retailer’s information. Adding elements that satisfy customers to the travel and transportation services push the travelers to speak about it, creating a word-of-mouth mechanism.

Thus, companies need to pay attention to the use of technologies, if they want an increasing and everlasting customer retention, but considering at the same time the need of each single customer. Currently existing services offered in this environment, from which customers expect a superior quality and attention to the customer, may be, at this time, not too advanced.

3.3.3 Limitations and Future Research

The research presented in the previous chapters attempted to address the gap left by in the literature on customer satisfaction and its antecedents in the railway sector. To discover solutions to the primary questions, all the elements explained in the conceptual framework were analyzed and conclusions were reached.

Moreover, the research questions were assumed and found reliable and valid answers in the data. However, the study has some limitations that will need to be investigated further in the future. First, the study analyzed the effect of technology development through which companies may enhance customer satisfaction and how these technologies can affect the intentions of customers, due to the ease of use of the technologies and its pace of execution. However, the research didn't consider customers that are not nowadays technology native generations that may be troubled with technologies and not able to take advantage of them.

Future research can fill this gap by analyzing, for example, the sensitivity of older generations towards the use of services associated with technologies development. In this case it should be further analyzed the intention of customers considered "laggards" of innovations to take advantage of them. This may be realized by a strong marketing campaign based on technology awareness. The study's reasoning is thus far from being fully understood, and therefore future research will bring new value to the current analysis.

3.4 Conclusions

All the research conducted until now, has highlighted how much customer satisfaction counts for each business profitability. Taking into consideration the Italian railway sector, in which there is nowadays a strong competitive environment (mostly on the highspeed trains), the seeking of an edge over competition may make the difference in profitability and brand awareness. Therefore, taking into consideration what already analyzed about the antecedents of customer satisfaction, some considerations have been carried out.

According to technology applications and their implication to service quality, creating solutions that may implement the ease of use of the journey process may facilitate and help customer to achieve more targeted services. Through technologies such as AI,

customers may receive a more personalized treatment, analyzing each profile and targeting the possible clusters of affiliation.

This type of solution may impact positively on the total business environment: the better the customers are served, the better businesses work. As a matter of fact, customers are always seeking for a better service that could fulfill their necessities and needs, something that can address their wills and enhance customer satisfaction. Moreover, as the results of the study have highlighted, all these factors may lead to customer loyalty not only for new entrants of customers but for customers that already use their business instead of another.

The next chapter is going to describe an exemplum of solution that may derive from the research held until now: a service that combines the application of technology to increase the ease of use of it and a service that points out customer understanding enhancing targeted services. This service aims to identify each customer needs through AI application and bridge their necessity, giving the possibility to take advantage of a solution that connects people, stories, and life.

CHAPTER FOUR:

IBM case study: social seat map for FS technology

4.1 Introduction

After considering the research about customer satisfaction in the railway industry specifically, results have highlighted the major factors of customer satisfaction and how the combination of these could lead to customer retention.

Therefore, in light of the previously considerations, the research author, in collaboration with IBM, has proposed a new additional solution to implement and improve customer satisfaction in the railway business in order to be coherent with the study conducted until now.

According to what analyzed before, customers are positively impacted about how technologies can better the customer experience within the travel. Therefore, this case study will illustrate how new technologies and new implementations may enhance customer experience. Secondly, the population considered for the research, has underlined the importance of customer understanding and personalized services: as a matter of fact, this case study will consider customer targeted services as its core objective. Lastly, it will evaluate customer retention and how this could be possible through a combination of the above-mentioned main factors.

Thus, this case study particularly proposes the analysis activities to implement a cognitive “Social Seat Map” feature (on the B2C channel), capable of suggesting to the customer the best seat in the train in order to share their journey among people with the same interests or passions. Consequently, taking advantage of this solution during the time spent on trains, the focus on the customer will increase cognitive suggestions that can improve the entire travel experience and add significant value to the time spent on the train.

4.2 Market Overview

In 2000, the European Union mandated greater deregulation of the rail industry. Gruppo FS increased its focus on customer service and multimodal integration in order to keep ahead of emerging competition. This situation in Italy culminated

with PICO¹⁰⁵, a digital reservations and ticketing system built on IBM Cloud that more seamlessly integrated the Gruppo FS network¹⁰⁶.

As already mentioned, the railway industry has not been immune to the ravages of the coronavirus epidemic in recent years, but nowadays travel and transportation have gradually resumed. Organizations had to plan for recovery when countries reopen and demand for passenger service and freight movement of commodities begins to rebuild. This will assist ensure long-term viability and profitability in a post-pandemic environment. Supply chain and business continuity are becoming increasingly dependent on technology-driven innovation. As a result, establishing digital interactions between rail passengers and personnel can benefit the railway business in ways that go beyond COVID-19. IBM is best positioned to assist the railway industry recover and flourish in a post-COVID world with its broad portfolio of new technologies, including artificial intelligence, cloud, mobile capabilities, and extensive industry knowledge.

Nowadays networking is becoming essential for each person and professional life. According to new LinkedIn global survey results¹⁰⁷, almost 80% of businesspeople consider professional networking one of the most important factors to career success. Despite the importance of networking, the survey revealed gaps in how professionals feel vs. their behavior and how they stay in touch with their network. According to the survey conducted, 38 % globally said they find it hard to stay in touch with their network. The leading cause of it say it's because they don't have enough time (nearly half 49 % globally). Interestingly, despite the majority (79 %) globally agreeing that professional networking is valuable for career progression, less than half (48 %) globally say they keep in touch with their network when things are going well in their career.

Moreover, considering the technology trends of the recent years, the use of digital marketing is increasingly being used effectively to increase customer loyalty and provide a competitive advantage.

Although trains are places where strangers potentially meet, they are also described as non-social places for passengers. Considering social media environment, according to

¹⁰⁵ IBM.com (PICO case study)

¹⁰⁶ IBM.com (railway industry: FS case study)

¹⁰⁷ News, LinkedIn.com

data from We Are Social's "Digital 2021" report¹⁰⁸, global social users in January reached 4.5 billion (+9.2%), out of a total population of 7.89 billion; a key fact is that 5.29 billion people use mobile. More than 50 million people in Italy access the Internet every day, of which 41 million are social media users.

In Italy, social penetration stands at 58% of the population, totaling about 35 million individuals who post, tag, recommend, and like and the 98% of them access from mobile. This study has been depicted by Statista.com regarding the number of users of leading social networks in Italy until 2021. As a matter of fact, in 2021 Facebook was the social network with higher penetration rate, as it counted 36 million users in Italy. As of March 2021, Instagram followed with 28.8 million users and the professional social network LinkedIn ranked third with 20.7 million users.

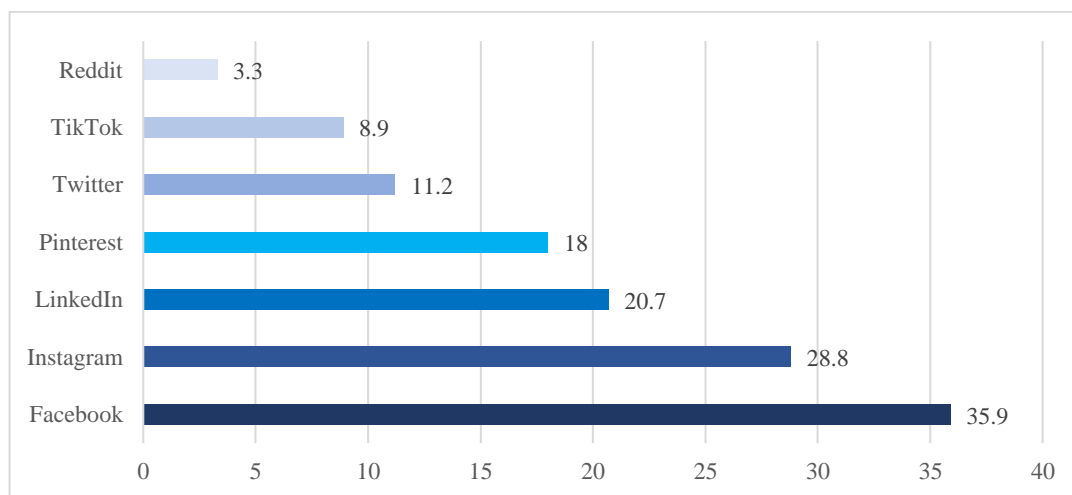


Figure 19: Number of users of leading social networks in Italy in 2021 (in millions)¹⁰⁹

Moreover, web users spend an average of as many as 2 hours a day on social networks, and 31% use social for work: this figure gives a good idea of the importance these platforms have for modern marketers. It is estimated that by the first half of 2022, 60% of the world's population will be on Social. Implementing a Social Web Marketing strategy is, therefore, now an imperative for brands that want to expand their market by increasing their customer base or seeking new business opportunities.

¹⁰⁸ <https://www.digital4.biz>

¹⁰⁹ Statista.com

4.3 Business Requirements

The reference scenarios envision that traveler, once they have chosen their travel solution and fare/service combination, can choose an alternative mode for seat selection. The new mode, proposed as an alternative to the current one, allows the traveler to be able to, at the same time, socialize his or her profile and relative interest and select a seat on the seat map alongside a traveler who demonstrates similar interests.

The solution involves the customer, because of his or her profile and relative interests, being offered seats adjacent to passengers who have, by authorization, shown the same interests. In addition, the solution makes it possible to create a profile of the traveler (even anonymous and not yet authenticated) that will in turn be "socialized" when other travelers book. The profile summarizes the traveler's interests and preferences among them. An algorithm will make it possible to identify the best carriage to match the interests of the traveler and passengers who have already chosen a seat.

To do so, technology application is fundamental through AI, to analyze passenger profiles in order to suggest the best seat in the train for the customer to share their journey among those with related interests.

Therefore, this cognitive component of the solution will enable to:

- draw the customer's profile by exploring their social profiles (e.g., Facebook, LinkedIn, Twitter, Google+) and summarizing their main characteristics.
- verify the best match between travelers who have already booked and the profile of the traveler who is booking.

However, to start the Social Seating process gradually, and due to the timing of the activation of social features, it is expected that profile creation can be done in three ways (not necessarily alternative):

- Choosing, even temporarily, the interests one intends to "socialize" on board by selecting one or more areas of interest.
- Creation of the profile in a "social" way, retrieving the interests declared by the traveler on his or her social profile.
- Cognitive profile creation, analyzing his social experience and designing his profile.

The use of the new feature, involves a series of steps:

1. Subscription: the customer provides consent to share his or her information and authorizes access to his or her social accounts to process a profile to be shared
2. Profiling: it may be divided in two options: could be added manually in the application, in which the customer enters their interests, or could be created by accessing structured data from the Facebook social account and the system integrates or creates them based on their social profile.
3. Affinity-based seat selection: the interests of the customer who is purchasing the trip are compared with the data of travelers who have already booked, to provide a visualization of the corresponding "best" carriage. A cognitive component will be integrated into the solution to interpret the activities performed on the different social accounts and derive better customer profiling. Interest comparisons are made only for those travelers who have completed steps 1&2.

Having completed the three phases above, when the customer is booking a ticket, in the "place choice" or "self-check-in" phase, the Watson Cognitive component is needed to identify similarities among customers' interests. For this component to perform the described activities a learning phase of the technology is to be expected. The customer's profile will be available in the private area (if customer logs in to the Trenitalia account during subscription) and by accessing it at any time he or she will be able to view and/or modify it. The data will be stored appropriately on the PICO database and there is no data storage for customers who use the Social Seat Map anonymously. Therefore, every data collected is before allowed by the customer, and the possibility to exploit of the data collected may be allowed only by the customer, avoiding issues of privacy.

This solution may be possible, through the inclusion of an "Expand my network" option at the time of ticket purchase, this will allow user data to be used by filling in more specific fields and will allow the application to understand the interests, or for example the user's profession.

Moreover, through progressive profiling it is possible to get more targeted results, aiming to enhance customer profiling every time the service is used, thus the Watson AI engine would have more detailed information to work with. This not only entices

the customer to use the service but tempts the customer to use it repeatedly. Therefore, it creates a positive correlation among targeted services enhancement and customer retention, confirming the importance of the results of the research questions. It is shown below the possible displays of the solution.

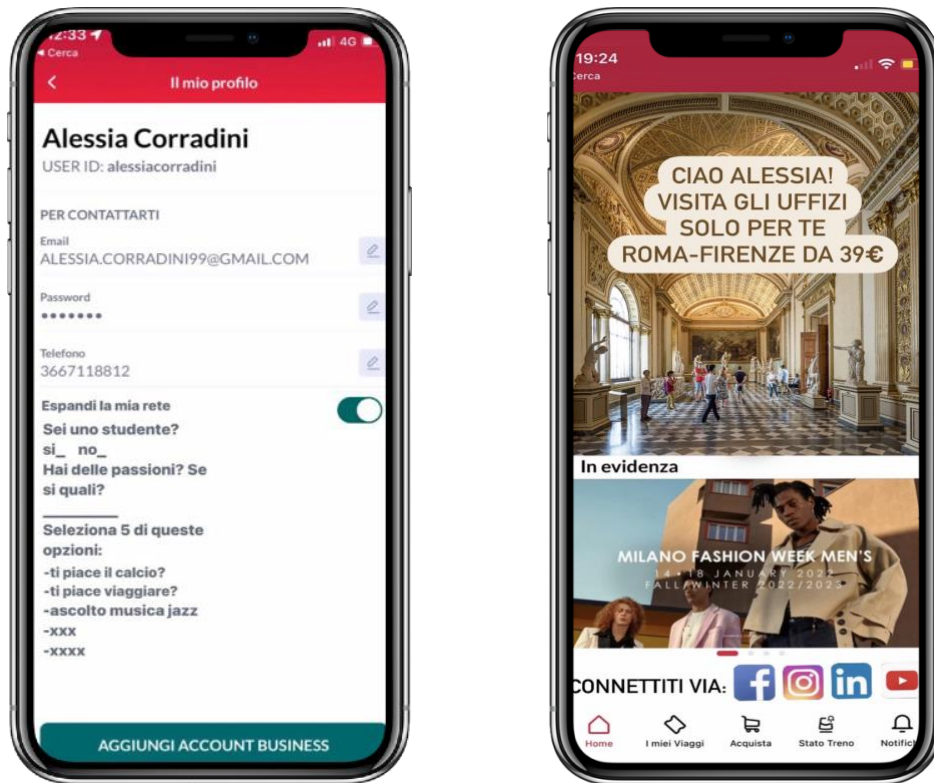


Figure 20: Possible displays of the solution

4.3 Research study

To identify the interests of travelers about this initiative, a survey was prepared. The [Google Survey](#) has been carried out of a sample of 105 people, respectively selected by a range of IBM employees and travelers. An overview of the entire survey is shown in the Appendix.

From a demographical point of view, the range of respondents accounted the most are the ones of the 30-60 age range (47,6%), following the young travelers (39,8%) and light weight is given to the range of 25-30 (7,8%) and over 60 (4,9%).

Secondly respondents have been asked to evaluate for them how much it is important networking and build new relationships. The impact was incredibly positive: more than a third of respondents (37,1%), has given great importance to networking and another third thinks it is still important too (34,3%). As a matter of fact, it has been of

clear evidence too, that for respondents the expanding their professional or personal network has also enriched them (see in the Appendix).

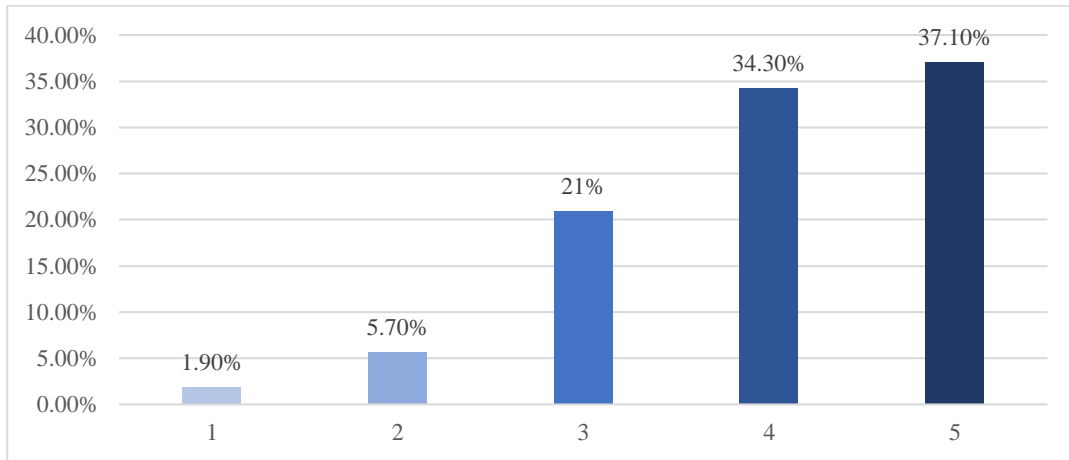


Figure 21: Importance of Networking for respondents

Moreover, respondents have been exposed to another statement in which have answered giving their preferences about it. It has been tested how much willing are customers to meet people who share their background while traveling (Column 1) and if they would like to meet like-minded people during the journey (Column 2). As shown in the graph below, the results are clearly positive.

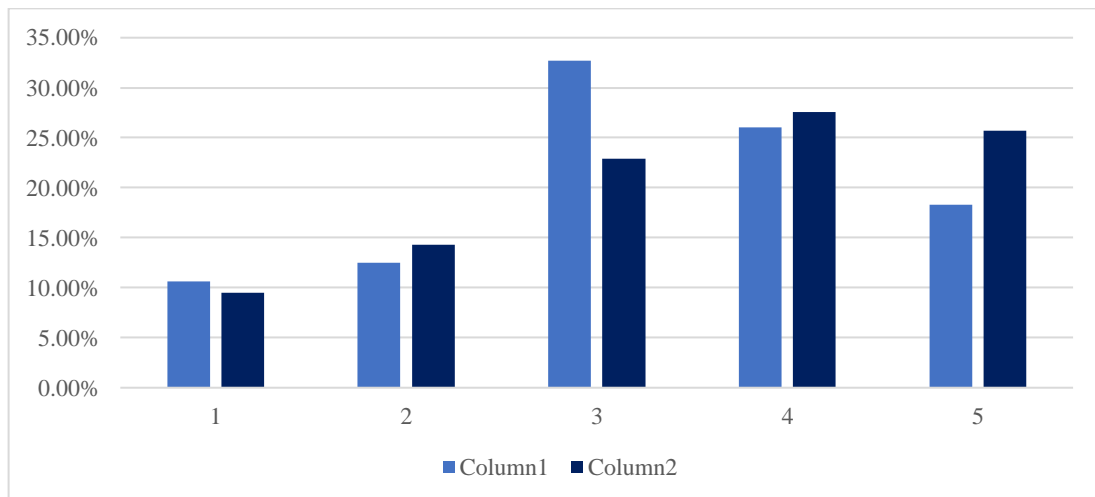


Figure 22: Respondents approach to affinity solutions.

Finally, respondents have been asked to give their own opinion about the solution that could be implemented. This specific question has been asked: “We want to enhance your travel experience by having you meet like-minded people on a professional or personal level, to take advantage of time on the road to make new connections. What do you think about it?”.

The responses have been of great importance to identify the major issues and factors that customers have and face during the travel journey.

The most interesting ones were:

- *"It is always interesting to meet new people, especially during travelling that can be considered wasted time. Changing this time into new possible opportunities would make every trip an adventure."*
- *"I think it is a good project to make sure that our luggage is not only filled with clothes but more importantly with experiences and new knowledge."*
- *"I think this is a very good idea, as there are important synergies between business and networking. This would optimize time and bring new opportunities to life."*

4.4 Benefits

The benefits that this solution implies are numerous. It is important however, to split the benefits in two major sections, from the firm itself to the client to the end-user (the customers of FS):

- the end user benefits
- the FS technology benefits

At first, by considering the benefits for the traveler, there are different aspects that involve the customer positively. First of all, it implies the improvement of the customer journey at its whole. As the survey of the research conducted before has shown, costumers of travel and transportation industry do not prefer to travel by their own. As shown below more than a third of the respondents (35,7%) strongly disagrees this statement.

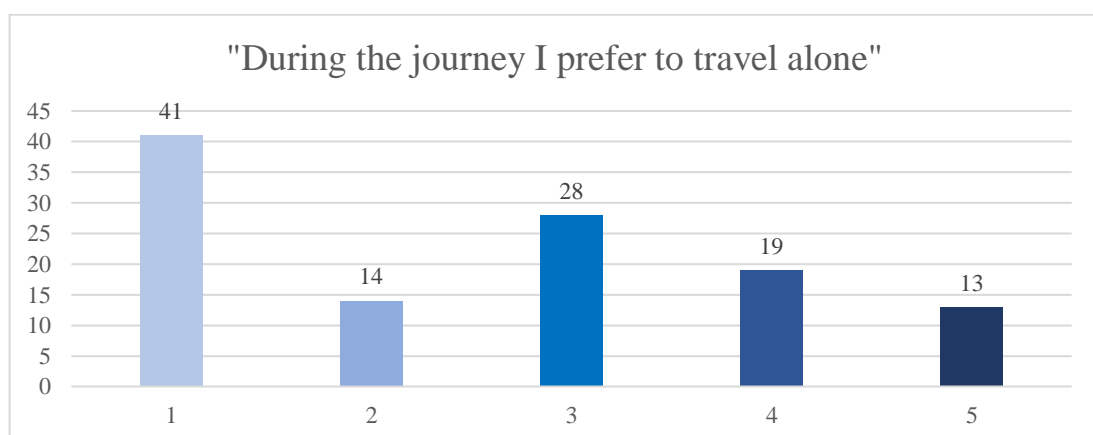


Figure 23: Preference of customers during travelling

Moreover, taking advantage of this solution, the customers meeting interesting new people may share the same interests and passions with, could acquire new know-how. This because enlarging the network that surrounds each person, the latter could enrich itself creating new relationships in professional and non-professional settings. Specifically in these historical moment in which sociality has been neglected due to sanitary emergency of COVID-19, the importance of rebirth and the eagerness to socialize has become more and more necessary for further development, both personal and professional.

Instead, the benefits that FS technology could achieve by taking advantage of this solutions are considered in a different perspective, a more B2B one.

First of all, due to the fierce competition that in Italy has come into being in the last decades, it could enhance their portfolio of solutions, creating a competitive advantage rather than the competition.

As depicted in the research in addition, customer satisfaction leads to customer retention: the more the client is satisfied and the more it is possible to have loyal customers increasing the use of “social seat map” application.

Moreover, another aspect to take into consideration is that through this Social Seat Map the Business formula could stand out. As a matter of fact, creating a service that could help the customer to expand his /her professional network, could give the right boost to the business formula on the highspeed trains.

Assuming that during the travel the customer would like to propose his/her business idea to someone who is in the same sector that is taking his/her same train, the Business formula could enhance his/her conversation, creating a stimulating environment, able to express at the best the situation.

Thirdly this solution creates large benefits to IBM itself too.

As a matter of fact, it gives the possibility to implement an algorithm capable of identifying like-minded people in terms of business or interests and placing them close together on the train. This technology, the AI integration, is a focal part of the IBM portfolio businesses. Watson Cognitive¹¹⁰ and its portfolio of AI applications is fundamental for nowadays business improvement: it operationalizes AI and

¹¹⁰ <https://www.ibm.com/it-it/watson>

transforms the way of working enabling the operation of numerous facets of businesses processes.

Finally, the Social Seat Map solution could collect an extensive selection of data. This new powerful factor, which is data collection, is becoming more important day by day. Having precious data about each customer is fundamental for FS technology for the implementation of the service in order to hold information about different and numerous people and interests.

As a matter of fact, the development of multiple technologies, such as Internet of Things (IoT) and big data analytics, smart devices and software applications, has resulted in exponential growth in the volume of data generated within organizations. Businesses have been among the first to be affected by this phenomenon as they are driven by Digital transformation, in the Industrial 5.0 scenario.

Data are generated during every daily activity, from a variety of sources and in different formats, and organizations need the right tools and skills to analyze them properly. A data-driven company has advanced decision support capabilities and abilities to increase its productivity by 5% and its profitability by 6%¹¹¹.

Some estimates¹¹² have shown that by 2025 about 90 zettabytes of data will be generated directly from IoT technologies, 49% of it will be historicized in public cloud storage, and about 30% will need to be processed in real time. Organizations find it difficult to fully analyze data, failing to extract more than 30 percent of its potential value¹¹³. Therefore, technologies such as Watson Cognitive may be the right solution to implement and to exploit all the potential that data has in our world.

4.5 Limitations and Future Research

An aspect that has not been observed for this solution and therefore it could be analyzed in further research is people willingness to socialize or to undertake conversation with their seat “neighbors”.

¹¹¹ (McAfee and Brynjolfsson, 2012)

¹¹² (Reinsel et al., 2018)

¹¹³ (McKinsey & Company, 2016).

Future studies, thus, can focus on what may bring to two strangers to undertake a conversation and which is the propensity of travelers on engaging to network. Moreover, they can analyze if there are differences in the preferences taking into consideration also other elements of customer satisfaction antecedents, than the three ones studied in these pages. In this way it is possible to know which of all the elements are considered more relevant for travelers and end users.

Besides, as already underlined in the limitations of the research, the solution may not be preferred by technology “laggards” since there are not practical of technology applications, social medias and of the way to take advantage of them.

Against the expectation, anyway, older generations of the research (5% considering over 60 respondents), have not seen this solution as an obstacle but as an opportunity. However, one of them depicted this solution as: *“It sounds fun and functional, a way to make useful even time spent traveling, which often seems wasted”*.

4.4 Final considerations

By recalling the three research questions proposed in the previous research, the correlation with the case study reported has been of clear evidence.

By taking into consideration the first question (*“Does technology development enhance customer satisfaction?”*), the survey conducted for the case study has highlighted how still can be important for them technology application on services and experiences. Nonetheless, the case study’s solution exploits technologies as AI and social media platforms in order to gather data and to address better solutions to customers.

Consequently, the second question of the research (*“Does technology drive towards customer understanding?”*) can be at the same way evaluated. Through technologies as AI and in particular Watson Cognitive solution, according to the case study, it is possible to gather data for each customer and address possible solutions and selection on seat map for example.

The last question (*“Is customer retention a consequence of customer satisfaction?”*) could be clearly justified by the application of progressive profiling and engagement

analysis in this solution. The more a customer takes advantage of this solution the more the algorithm gathers data and could address better solutions for the customer. Consequently, it can also be explained by the fact that customers that take advantage of the solution and are satisfied about it, through the progressive profiling can achieve better and better performance of the solution. Therefore, the more you take advantage of the service the more the algorithm knows you and identify better your needs and desires. Moreover, the objective of the case study was to address these three questions into a possible solution that could enhance not only customers but the entire welfare of the business.

In conclusion, in order to clarify the interconnection among the research appointed and the case study implemented by the author of the study, a summarizing table has been depicted. The table has, in addition, the objective to simplify and give a general overview of the major drivers that have been implemented during this study.

Table 5: Summary of the study research

Research questions	Research study	IBM Case study
<p><i>Does technology development enhance customer satisfaction?</i></p>	<p>The innovation of technology in its various forms, from automation and AI to digitalization of information strive to enhance customer satisfaction. Technology and data-driven, always-online world means deeper, sometimes real-time, connections to customers. Conjoint analysis confirms the importance of technology for customer satisfaction</p>	<p>The case study survey has highlighted how still can be important for respondents' technology application on services and experiences. The case study's solution exploits technologies as AI and social media platforms to gather data and to address better solutions to customers.</p>
<p><i>Does technology drive towards customer understanding?</i></p>	<p>For organizations looking to set themselves apart from the competition, providing a great customer experience is quickly becoming a top concern. Conjoint analysis confirms the importance of customer understanding.</p>	<p>With technologies as AI and in particular Watson Cognitive solution, it is possible to gather data for each customer and address possible solutions and selection on seat map for example.</p>
<p><i>Is customer retention a consequence of customer satisfaction?</i></p>	<p>Customer satisfaction is a primary predictor of customer loyalty. Satisfied customers are more likely to recommend services to others, which is the cheapest and most effective form of marketing and promotion through positive word of mouth, as well as the development of long-term loyalty to the company's services.</p>	<p>It could be possible through progressive profiling and engagement analysis in this solution. The more a customer takes advantage of this solution and is satisfied about it through the progressive profiling, the customers can achieve better and better performance of the solution.</p>

CONCLUSIONS

The current research has been focused on determining which aspects of customer satisfaction can attract customers in the railway industry. The extensive literature on the role of customer satisfaction antecedents provides for a thorough understanding of the various variables that contribute to customer satisfaction and their implications on various phases of the consumer choice journey, although it fails to address the use of customer satisfaction antecedents notably in the railway setting. It merely covers travel and transportation in general, rather than focusing on one the most important sectors of its industry as the railway one.

Simultaneously, the literature has shown how important customer happiness is to businesses and which factors are considered as essential to running a firm toward profitability. This can be enhanced using technology in this industry, which may significantly improve the customer experience in general, making it easier to use and opening new possibilities. The trend has been accelerated by the recent pandemic outbreak, which has prompted many individuals to turn to technology applications. This trend is likely to continue in the coming years, as many organizations want to continue using implementing online applications after having discovered its potentials. Since the future is digitally focused, analyzing how to promote its business is crucial. But how can the customer satisfaction may be implemented through technology applications? How can customers be served with targeted and personalized solutions? Does the convergency of these two factors leading to customer retention? These points were the focus of the research.

If customer satisfaction is crucial for every organization, it will be even more so in marketplaces where competition is stronger. The goal of the study was indeed to determine which aspects of customer satisfaction are more important to customers while using a certain service: which of those elements for the customers value the most. Two fundamental parts of customer satisfaction have arisen from a thorough grasp of the present literature: the technology application, which can make the ease of services enhance, and personalized services, which lead to customer understanding.

Many studies have identified technology implementation as the first and most essential factor influencing customers' perceptions of a service or solution. Therefore, the goal of the study was to see if technology implementation could have influenced the customer decisions. The necessity of providing a personalized and focused experience

for each consumer, on the other hand, has been stressed in literature. This focus on the client is critical for customer retention and favorable word-of-mouth effects. Therefore, the goal was to see if customers, given a specific product or service, were sensitive mostly on technology applications and implementations rather than customer understanding or both.

Following the definition of the previous aspects, three research questions were developed to examine the effects of the highlighted factors: respectively technology implementation, customer understanding and customer retention. These were used to characterize some features of customers' purchase behavior, such as the feelings they developed toward a given service, their willingness to pay it, and their willingness to talk about it with others, in order to see how those elements influenced the decision-making process of each customer.

The research and analysis have proved that the technologic component of application services plays the most important function, as it has the greatest impact on the attitude generated in the conjoint analysis. Therefore, customers are more comfortable on using services that may implement and ensure through technology a targeted service.

As a result, while the technology implementation on services and customer understanding are the most important factors in influencing customers' perceptions of a certain service, its effect can be amplified and enforced by retaining customers, which are the foundation of each business. When the technology implementation is paired with the customer understanding, customers in the sample analyzed were more ready to take advantage again of the given service and could talk about the service with others about their satisfied experience.

According to the case study of IBM on customer satisfaction in railway sector, by the first half of 2022, 60% of the world's population will be on social media applications¹¹⁴. Thus, activating the social seat solution proposed in the last chapter of this study, would create an immediate effect with a substantial increase in engagement of customers. Very important, at the same time, is the data collected through user profiles. This information is available to be used for various marketing initiatives, to measure in addition the success levels of the initiatives.

¹¹⁴ (Digital 2022: Global Overview Report — DataReportal – Global Digital Insights, 2022)

In conclusion, the study conducted has had as final objective to seek the antecedents of customer satisfaction in the railway industry and it was finalized with the purpose of identifying customer trends and needs. Through all the above highlighted so far, the objectives set were achieved having positively affirmed the pillars of customer satisfaction in this given sector. This research, however, aims also to contribute to the body of literature on the subject and provide insights for further analysis and study.

APPENDIX

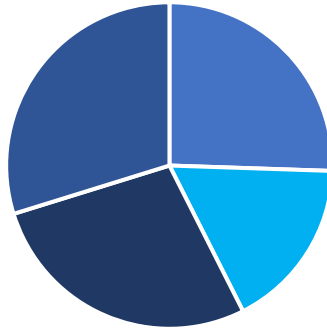
The appendix depicts the complete overview of the surveys and calculation conducted.

Survey 1: General overview of customer experience and customer satisfaction

Demographic section:

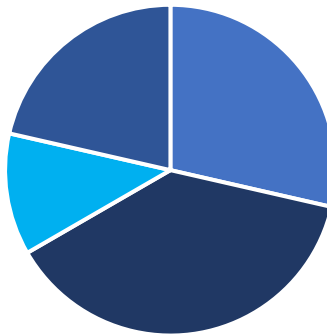
<i>Gender</i>	<i>Male</i>	<i>67</i>	<i>43,9%</i>
	<i>Female</i>	<i>82</i>	<i>54,4%</i>
<i>Age</i>	<i>16-23</i>	<i>48</i>	<i>29,8%</i>
	<i>24-29</i>	<i>17</i>	<i>11,4%</i>
	<i>30-59</i>	<i>70</i>	<i>58,3%</i>
	<i>>60</i>	<i>16</i>	<i>10,5%</i>
<i>Frequency of travel</i>	<i>1 (never)</i>	<i>18</i>	<i>12,3%</i>
	<i>2 (rarely)</i>	<i>21</i>	<i>14%</i>
	<i>3 (sometimes)</i>	<i>63</i>	<i>41,2%</i>
	<i>4 (often)</i>	<i>33</i>	<i>21,9%</i>
	<i>5 (very usually)</i>	<i>14</i>	<i>10,5%</i>
<i>Motives of travelling</i>	<i>Work</i>	<i>36</i>	<i>23,9%</i>
	<i>Trip</i>	<i>51</i>	<i>33,6%</i>
	<i>Leisure</i>	<i>53</i>	<i>35,4%</i>
	<i>Other</i>	<i>11</i>	<i>7,1%</i>
<i>Take advantage of additional services</i>	<i>Yes</i>	<i>126</i>	<i>83,3%</i>
	<i>No</i>	<i>25</i>	<i>16,7%</i>

“Which is the first thought that you associate with customer experience?”



■ customer attention ■ customer understanding ■ quality ■ comfort

Which services do you prefer?

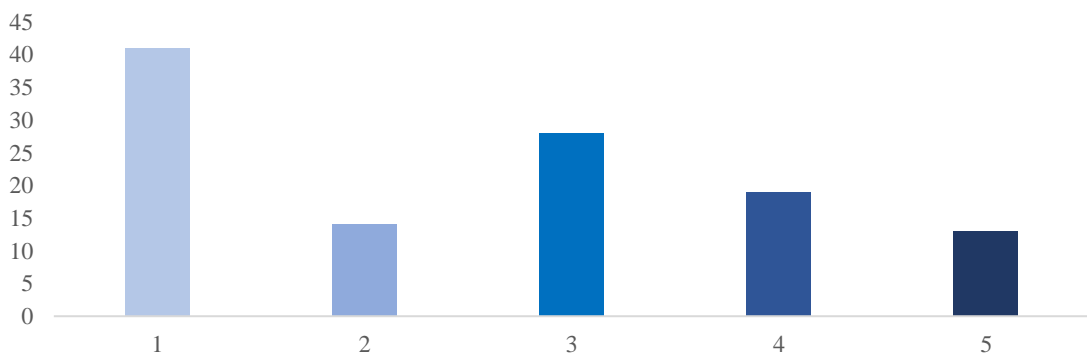


■ Wi-fi ■ Seats selection ■ Priority ■ Meal

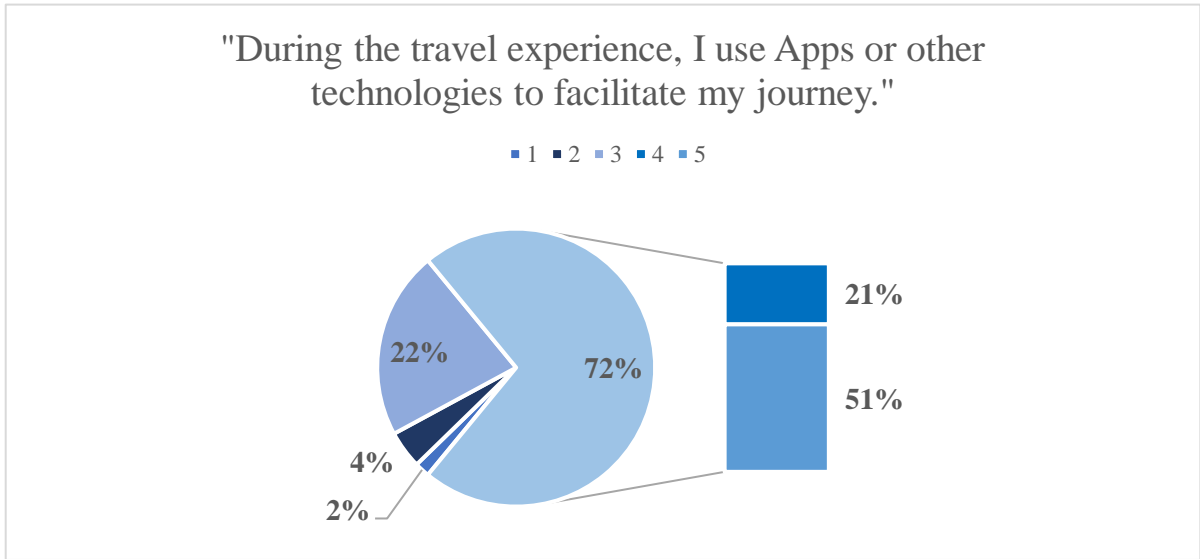
Statements:

1:

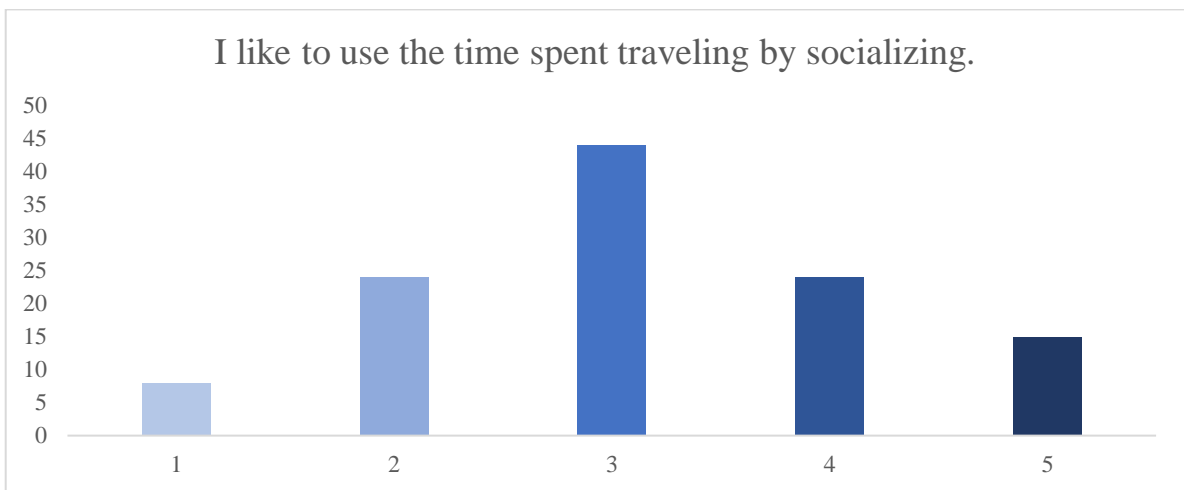
"During the journey I prefer to travel alone"



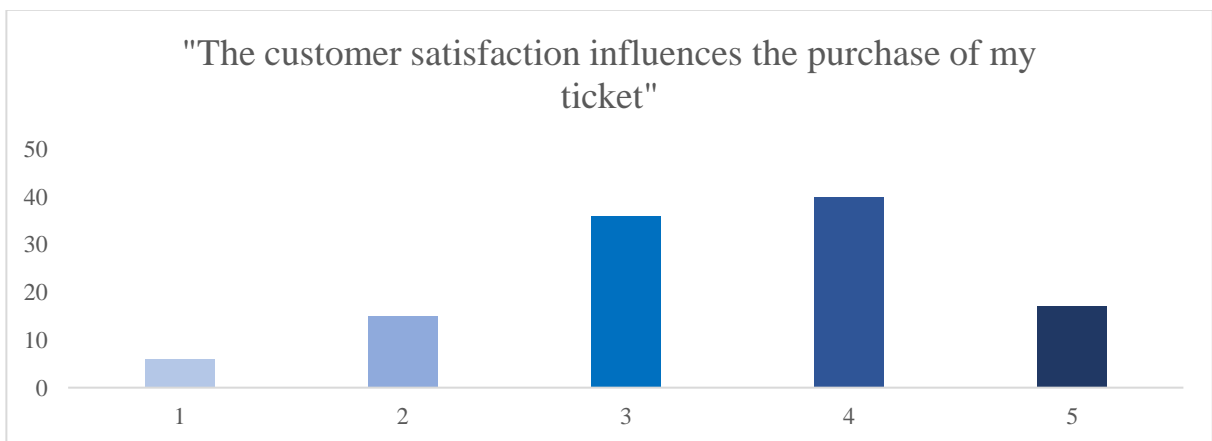
2:



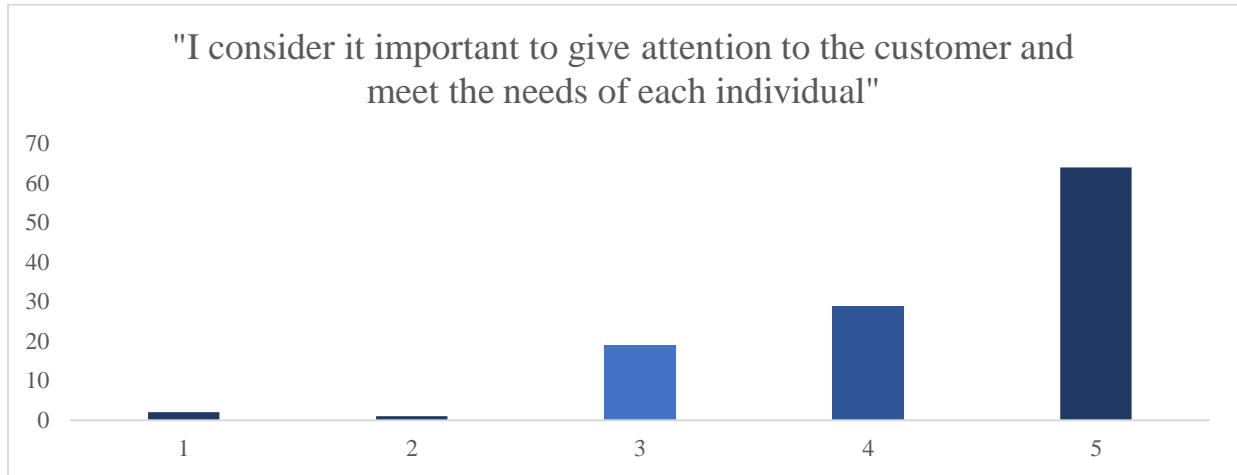
3:



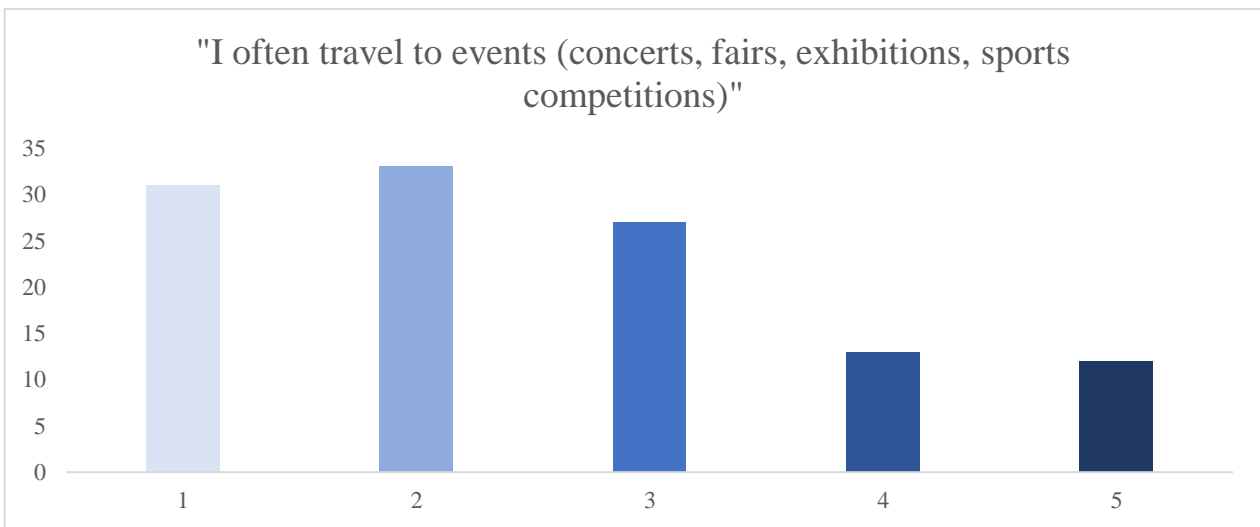
4:



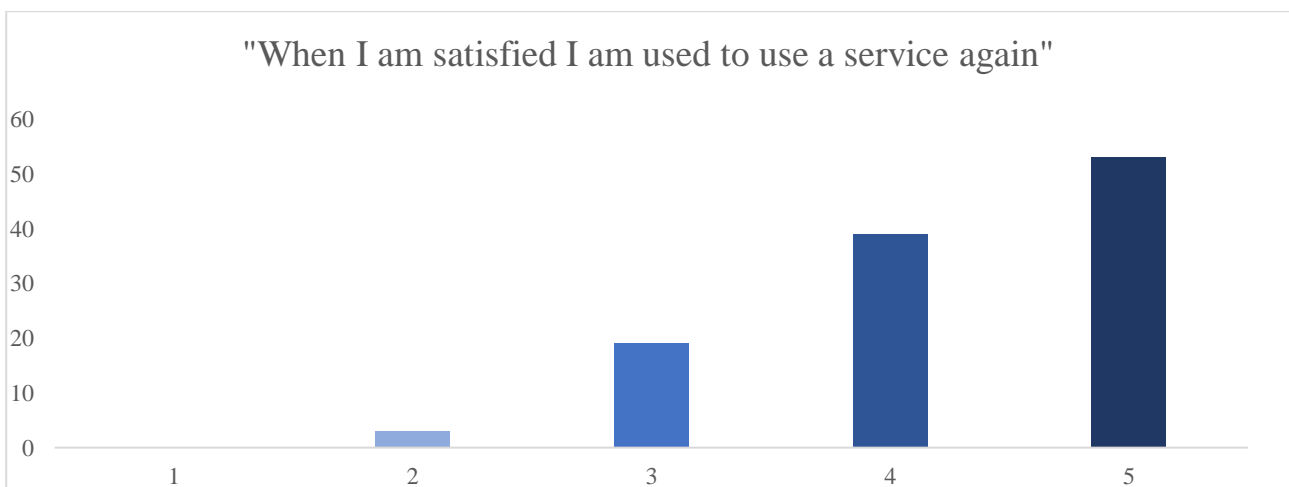
5:



6:

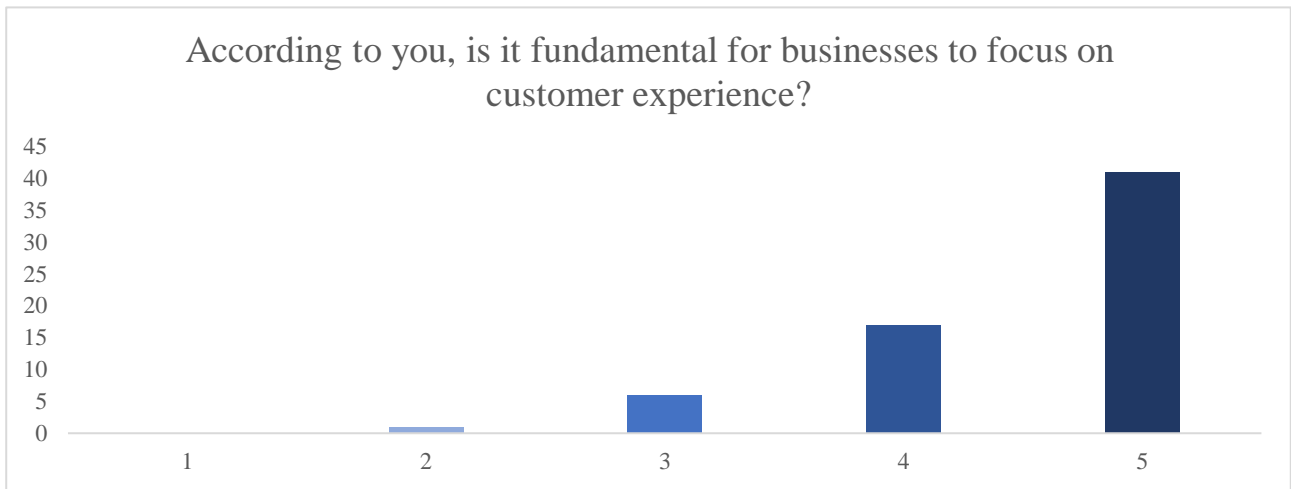


7:

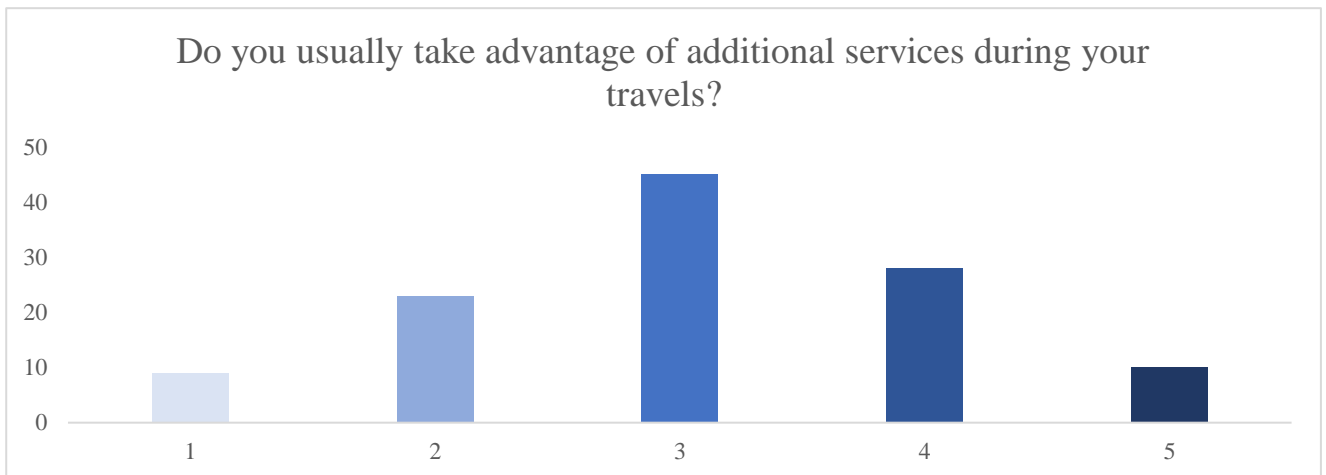


Functional Questions:

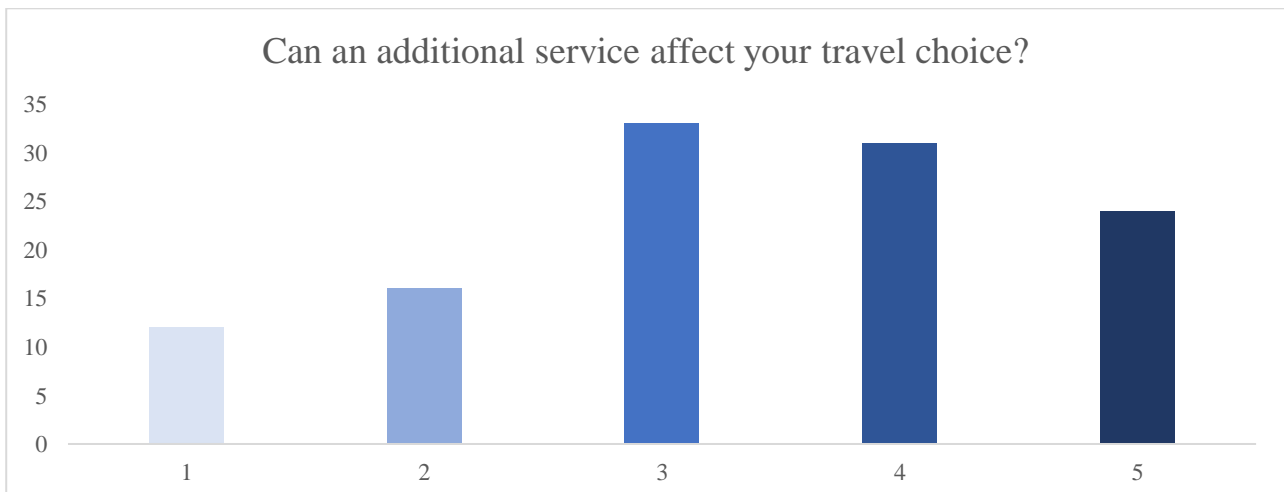
1:



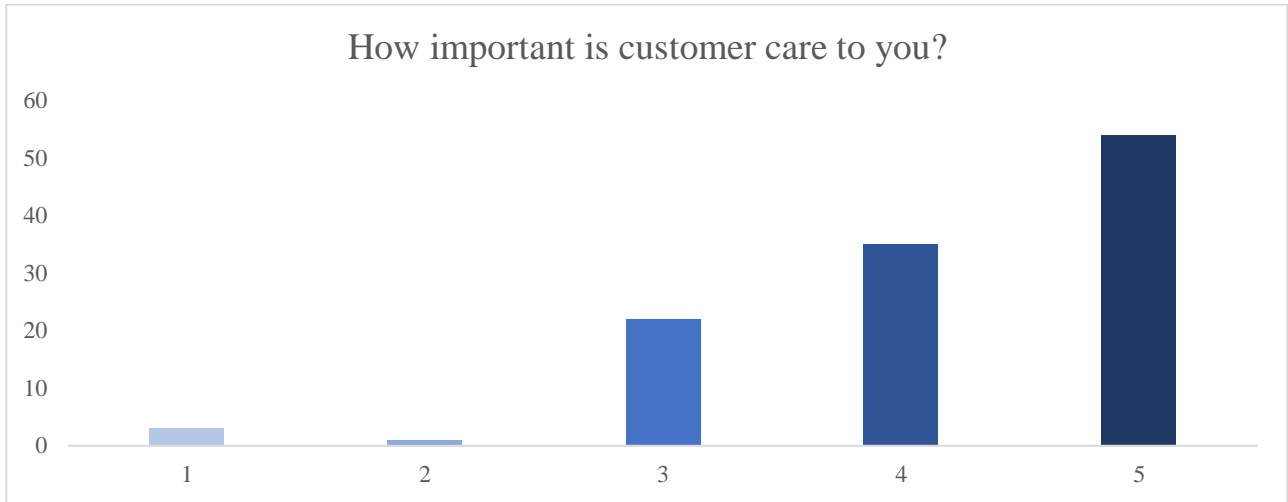
2:



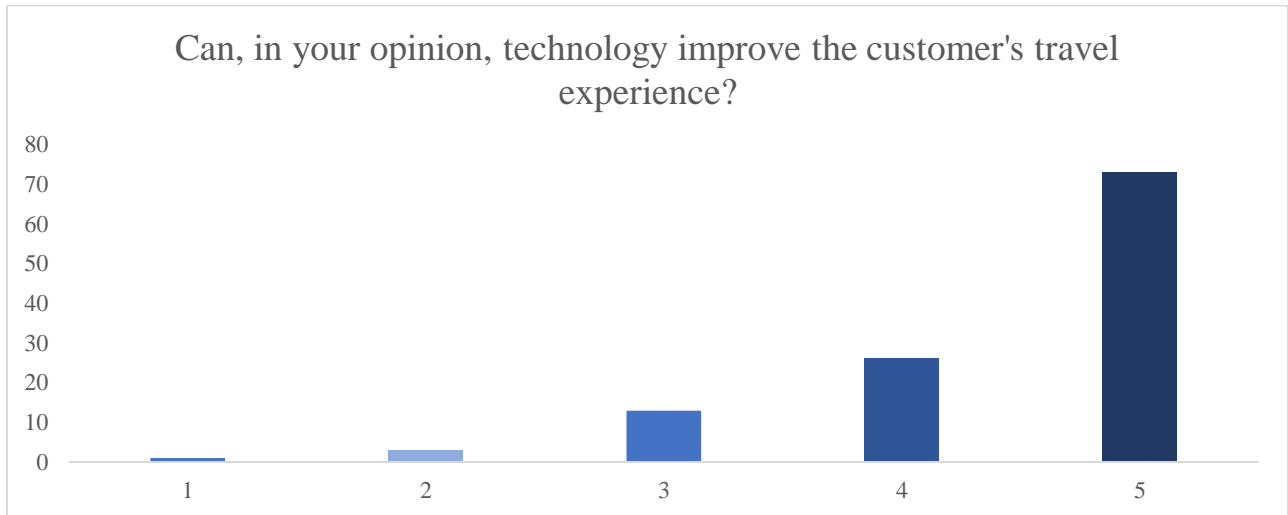
3:



4:



5:



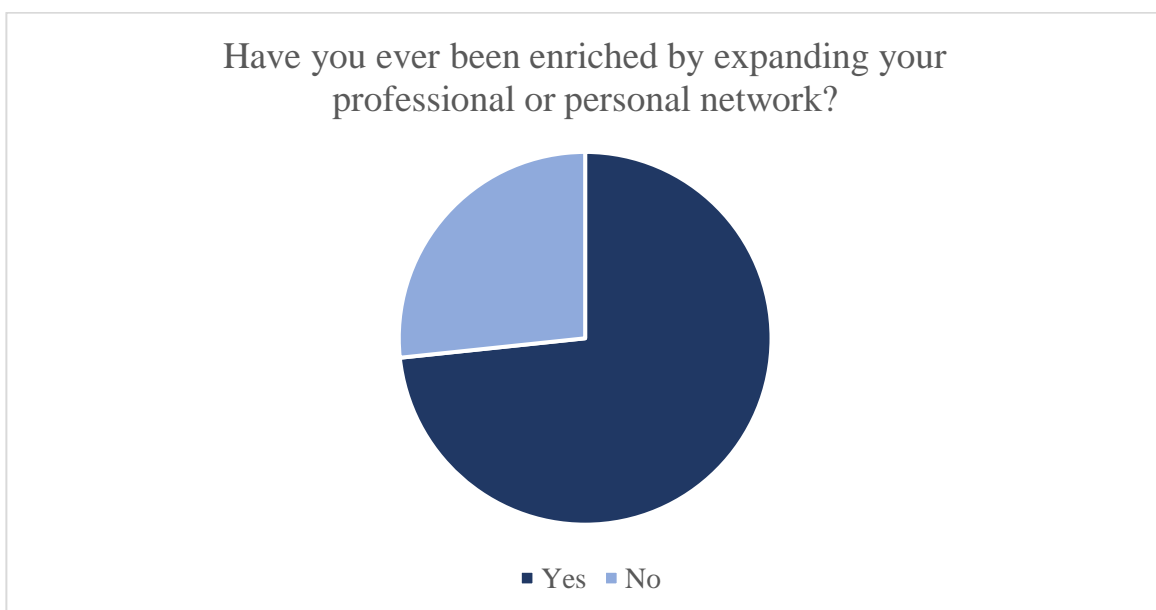
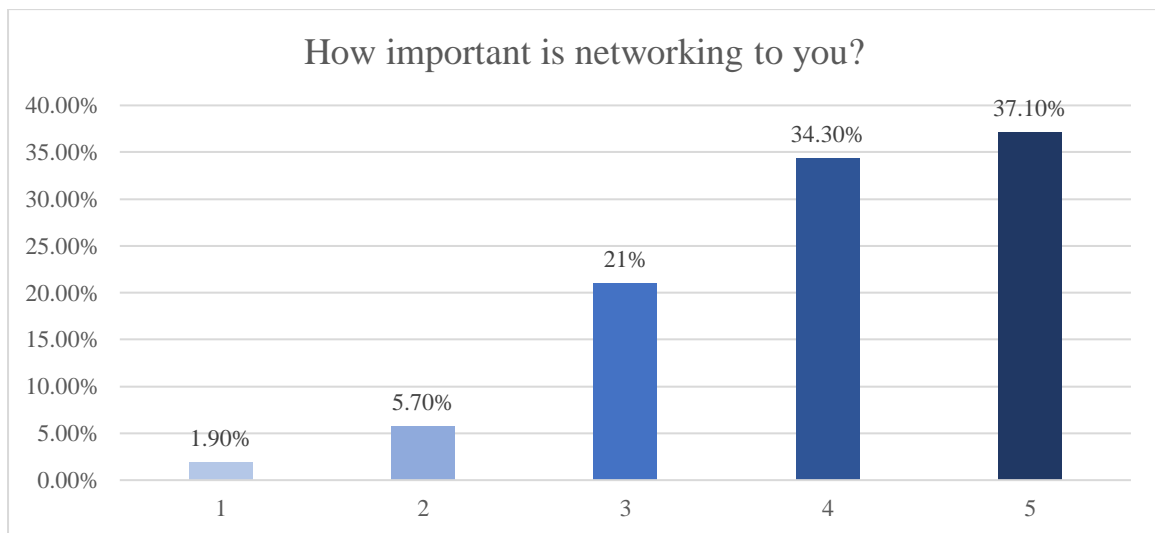
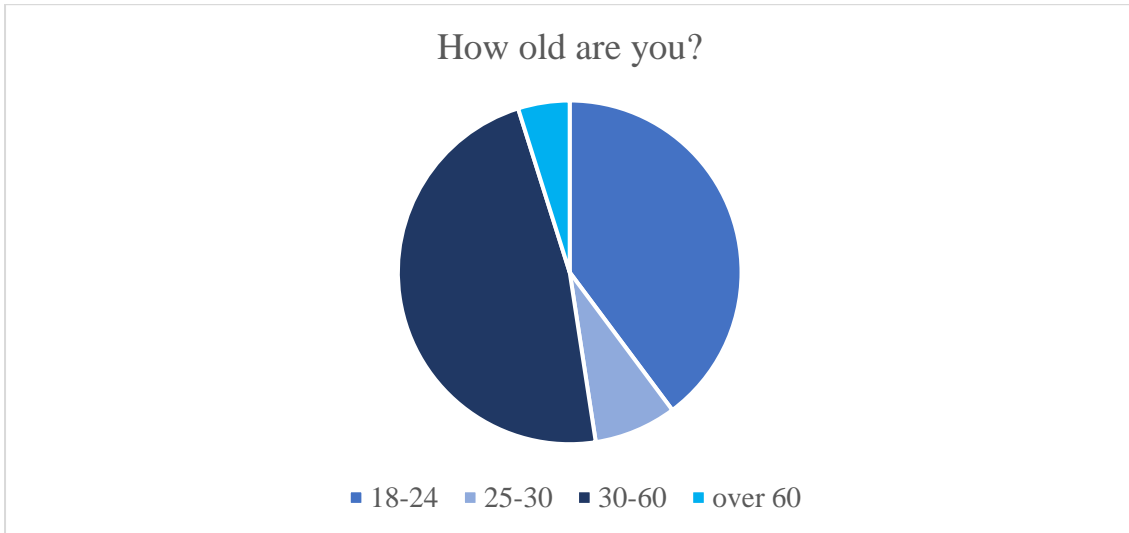
Conjoint Analysis

Correlation among the 7 statements of Survey 1

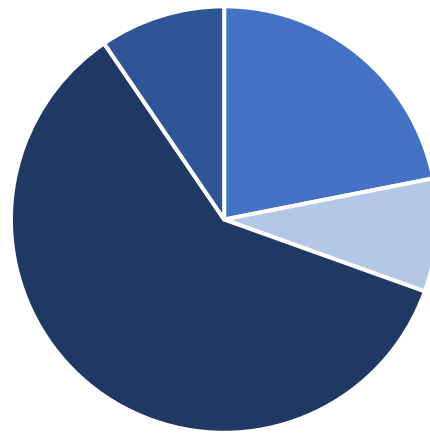
		Ratings				
		1	2	3	4	5
Statements	1	11,20%	17,20%	24,10%	12,10%	35,30%
	2	2,6% %	4,30%	21,60%	21,60%	50%
	3	7,00%	20,90%	38,30%	20,90%	13%
	4	6,10%	13%	31,30%	34,80%	14,80%
	5	1,70%	1%	16,40%	25%	56%
	6	26,70%	28,40%	23,30%	11,20%	10,30%
	7	0%	2,60%	16,40%	35,30%	45,70%

Correlation among statements and ratings	0,68267683
	0,93499358
	0,1611489
	0,49946236
	0,93053294
	-0,9161321
	0,9779539

Survey 2: Social Seat Map solution for FS technology

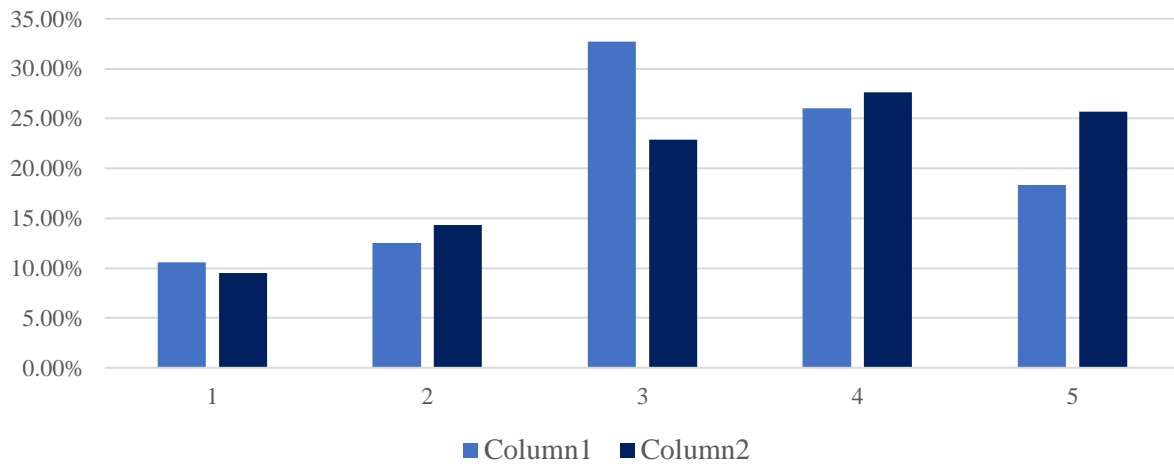


What do you do during the hours spent on the train?



■ Work ■ Study ■ Reading / watching Films ■ I get bored

How willing are you to meet people who share your background while traveling? Would you like to meet like-minded people on the trip?



■ Column1 ■ Column2



Department of Business and Management
Major in International Management

Chair of Advanced Marketing Management

An empirical study of customer satisfaction
in the Italian railway industry: a focus on
IBM case study

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SUPERVISOR

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CANDIDATE

Academic Year 2021/2022

SUMMARY

ABSTRACT

Customer satisfaction, nowadays, is one of the major factors of profitability of each business. Recently, in such a fast-paced world, the need of addressed solutions or services that lead to customer satisfaction has become a compelling one. The following research, thus, aims to focus on customer satisfaction and its antecedents in travel and transportation environment.

Specifically, the aim of the study is to find the antecedents of the customer satisfaction in the railway industry, focusing on the Italian one. This factor has not already been highlighted by the present literature, giving the possibility to undertake further research. Besides, the study will also investigate the relevance technology applications on customer satisfaction and how much customer understating may influence customers on choosing a solution in the railway sector specifically. Moreover, combining those two features, an analysis about how the convergence of customer satisfaction factors may lead to customer retention will be conducted.

A sample of 152 participants has been selected to analyze customers' preferences for the above-mentioned characteristics. Moreover, the antecedents of customer satisfaction for businesses in the travel and transportation industry, notably in the railway sector have been identified. In addition, a case study based on the customer satisfaction issue of railway sector will be run. Through the technologies of IBM portfolio moreover, the objective of the research may be fulfilled.

Key Words: Customer Satisfaction; Technology; Customer Understating; Customer Retention; Railway Industry; IBM.

Paper Type: Research Paper

INTRODUCTION

In a highly competitive railway sector, such as the Italian one, ensuring customer satisfaction is one approach to acquire a competitive advantage. Analyzing the effect of customer satisfaction on customers will allow to consider the concept from the customers' point of view. The first chapter will depict the travel and transportation sector in Italy, focusing on the last decades competition of the Italian railway sector. The next chapter will analyze customer satisfaction through a deep analysis of the

literature review. It will draw attention to any publications on the antecedents of customer happiness in the railway business, particularly in Italy. The gap therefore will lead the research to three central questions that will be discussed. The gap of the literature through a survey conducted out of 152 respondents will be analyzed.

In conclusion, considering the research highlighted through the literature analysis and the conceptual framework assessed, a case study will be considered. This latter is about the “Social Seat Map” solution, which was suggested by IBM for FS technology. Solutions that can impact choices and implement client satisfaction could make a difference in the railway industry. As a result, this solution would focus on the primary determinants of customer satisfaction, harmonizing the study results and providing validation of what has been researched thus far.

INDUSTRY OVERVIEW

Travel and transportation industry has been, through over the XX century to nowadays, a crucial industry of the Italian economic scenario. In the years, Italy has established a well-developed transport infrastructure and from airplane to railway, that has been a fundamental part of Italian GDP. This industry comprehends different types of transportation such as: transportation infrastructure (the construction, maintenance, and operation of transportation infrastructure); public transport; airlines; railways; maritime shipping; cruise industry, trucking industry; logistics...etc.

Taking into consideration the railway sector, it accounts more than 82000 employees¹¹⁵, meaning the great importance given to the transportation industry. In truth, the Italian rail network has always been substantial, particularly in the north, and today includes a high-speed train network that connects the country's major cities from Naples to northern towns like Milan and Turin. Italy has the world's 13th largest high speed rail network.

Ferrovie dello Stato launched the first railway service in 1905. The company is responsible for over 46,000 kilometers of railway and road network infrastructure. On December 31, 2020, the domestic railway infrastructure operated by Rete Ferroviaria Italiana covered 16,782 kilometers. The Trenitalia travel section of FS Italiane is a priceless heritage that, now free of rigidity and constraints, is enriched every day. The company's goals include assuring the country of a quality service offering capable of meeting the mobility needs of travelers on a national and European level.

¹¹⁵ Luigi Ferraris Presentazione Piano Industriale 2022-2031

On the other hand, after a century of monopoly of the railway industry, Italo joined the market: it was Europe's first and only private high-speed train in which both Intesa San Paolo and SNCF (the public French train operator) joined. Italo was initially denied access to the main stations of Roma Termini and Milano Centrale. Italo's major competition comes in the form of ticket prices, which it has always strived to keep lower than Freccie's ones. From 2016, the average ticket price has reduced by nearly 41%. This is the clearest indication that price reductions have resulted from competition.

In summary, Italo faced numerous challenges that were overcome by eliminating the monopoly in the field of rail transportation that had existed for nearly a century, thereby stimulating a process of innovation, and making transportation more accessible. After all, *“Competition is not everyone's struggle against everyone. It is a process of identifying the most "social", the most capable of satisfying mutual interests. In competitive markets, you don't take something without giving something else in return.”*¹¹⁶

This fierce competition has led both to FS and Italo to enhance the services offered in order to edge the competition and therefore, enhancing the total welfare of the railway environment (from customer satisfaction to service quality).

According to the coronavirus pandemic (COVID-19) and the measures put in place to stop it have had a significant impact on the travel and transportation industry. The potential shock due to the decline in the international tourism economy in 2020 could fluctuate between 60 and 80 percent compared to 2019, depending on the duration of the health crisis and the speed with which travel and transportation resume, according to the scenarios identified based on OECD estimates. Anyway, although the rail industry was not immune to the consequences of the pandemic¹¹⁷, it along with the travel and transportation in general have gradually resumed. Organizations have implemented plans for recovery to ensure long-term survival and profitability in a post-pandemic world. As countries have opened, the demand for both passenger and freight transportation of goods has begun to rebuild. Supply chain and business continuity are becoming increasingly dependent on technology-driven innovation.

¹¹⁶ Friedrich Hayek

¹¹⁷ IBM.com

Recovery hinges on lowering operating expenses, enhancing agility, and reducing consumer health concerns.

Beyond COVID-19, introducing digital connections between rail passengers and business has been mainly able to benefit the sector, becoming the real solution for the re-birth of the travel sector in general. We now do live in a digital age where most of individuals book their vacations online. As a result, new trends are sweeping the railway industry, ushering in a new era of interconnectedness and customer-centricity.

LITERATURE REVIEW

Customer satisfaction is a cornerstone of all marketing operations, according to Tam's analysis. Customers have assumed a significant role in deciding the performance of the travel and transportation industry. The industry's market leader is the firm with the highest client retention rate and growing customer base. This study examines how customer satisfaction is composed, and what could be the possible antecedents of dissatisfaction in the travel and transportation industry. The significance of technology and technology development for customer satisfaction will be examined as well.

Satisfaction is defined by Howard and Steth as "the buyer's cognitive condition of being sufficiently or inadequately rewarded for the sacrifice he has made". Customer satisfaction, according to Rust and Oliver instead, is the degree to which a person believes that an encounter produces favorable sensations. The expectation-disconfirmation model implies that before purchasing a product or service, buyers shape expectations about it. Combining the different above-mentioned definitions, the researcher of the current study defines customer satisfaction as "*customer's feeling of pleasure or disappointment as a result of the evaluation of their prior expectation and the perceived performance*".

If performance meets or surpasses expectations, they are more likely to have a positive disconfirmation. Low customer satisfaction leads to unfavorable reviews, whereas satisfied customers help you to build brand awareness. Moreover, it has been appointed how the service quality has a significant impact on client happiness, which leads to customer loyalty.

Customer satisfaction is essentially linked to the concept of value and pricing, but service quality is linked to customer requirements and expectations. Some academics regard the concepts of service quality and customer satisfaction to be interchangeable because they have a high degree of association. Others instead see significant differences in customer satisfaction and service quality. Businesses must offer goods and services that meet the needs of their customers more than ever before.

If customers are completely satisfied, they are more likely to become loyal customers of the company. Customer satisfaction data are indicators of customers' propensity to continue purchasing in the future. In order to leverage consistent customer experiences and build true customer loyalty, to focus on the customer itself may be necessary. Giving a personalized service to each customer not only enhances customer satisfaction but leads to loyalty and further to advocacy. Customers prefer companies that provide a variety of options, remember their preferences, and tailor the purchasing experience for them. The more options a customer has, the more they will feel they have power on the purchasing process.

Another key aspect that affects customer satisfaction following the major trends is technology. We are now in the period of the 5.0 technological revolution, which has resulted in a wide range of technology applications in a variety of industries, including banking, healthcare, retail, transportation, and so on. Customer service operations are being subjected to rapid, technology-driven change. Factors such as social media, websites, blogs, and apps provide tech-savvy businesses an advantage. Technology improvement is fundamental not only for better quality of service but also for collecting and analyzing data. Businesses must be able to acquire, merge, reconfigure, mobilize, and constantly grow technology resources.

One of the key goals of information systems is to help businesses run more efficiently. Salesforce's CRM software automates processes for organizations to assure continuous collection of customer data. A CRM system is a central database that stores all customer information, including contact information, purchases, service requests, contracts, and more. This means teams can proactively handle at-risk accounts and present satisfied customers with new options at the opportune time.

Moreover, research shows companies using AI achieve 3.5 times greater increase in customer satisfaction rates. AI can satisfy customers based on their unique needs and automation of processes.

THEORETICAL FRAMEWORK

Three research topics will be investigated, which will serve as the study's focal point. Following the analysis, the research questions, which have been established based on what is known from the currently existing literature, will be confirmed by the emerging calculations and data collected.

Customer satisfaction issues are expected to be given a high priority in the travel and transportation industry. Literature has mainly analyzed the consequences of customer satisfaction or dissatisfaction, but not the antecedents in this industry. Anyway, the previous studies have been fundamental to build the basis for the application of the main factors on the railway industry. Therefore, the aspects analyzed in the literature can be developed in the same way to every different industry, in this case in the railway one. The present research proposes to fill the gap, emerged from the literature.

One of these factors that this current study purposes is also to analyze the influence of technologies on customer satisfaction and increase of customer retention due to technological development. In this line, customer understanding, and personalized services are the new frontier of technology improvement, the more a customer has targeted services, the more customers are satisfied. Besides, one of the main aims of this study is to analyze which aspects of customer satisfaction can lead to customer retention. Consumers might acquire distinct attitudes and customer retention for a given service based on the pricing, ease of use, and personalized care. Because the literature has placed a high value on the application of technology to services, it is reasonable to assume that this will have a beneficial impact on potential consumers' contentment.

Research design development

To overcome the competition, it is important to rely on a competitive advantage. But it is not enough that companies are just better and faster than their competitors. Competitive advantage strategy, without aim for customers' satisfaction may lead company to "Cul-de-sac". Customer experience is nowadays a notion that encompasses everything, from service quality to how well items fit into their lives. According to a significant body of research, customer satisfaction influences

consumers' perceptions and preferences of travel options. Consumers might acquire attitudes and customer retention for a given service based on the pricing, ease of use, and personalized care.

The following section of the investigation will address these concerns. To do so, it's first required to better define the problems that the study aims to solve: three main research questions will be supported by the study's findings. By evaluating the phenomenon, it will be possible to depict the research's main questions and draw the following findings answers.

Therefore, the purpose of this study helps to establish the following research guidelines:

- *Does technology development enhance customer satisfaction?*
- *Does technology drive towards customer understanding?*
- *Is customer retention a consequence of customer satisfaction?*

As previously said, given the increased focus on technology's application to services, it is reasonable to believe that technological advancements will influence customer choice. As society changes to a more service-driven economy, where customer lifetime value becomes more important, we will see increased investment in technologies that improve experiences and earn trust year after year.

Secondly, as mentioned above, technology development may lead to more targeted services thanks to data collection of each customer. This new frontier of businesses is fundamental for any business life. Besides, increased levels of personalization will be a strong trend of the next years, with organizations grappling with the idea of leveraging technology to build tighter, more individualized relationships with their customers at scale.

Lastly, customer satisfaction is a primary predictor of customer loyalty¹¹⁸ in the travel and transportation industry because satisfied customers are more likely to recommend services to others, which is the cheapest and most effective form of marketing and promotion through positive word of mouth, as well as the development of long-term loyalty to the company's services.

¹¹⁸ (Masoomch, 2006)

RESEARCH STUDY

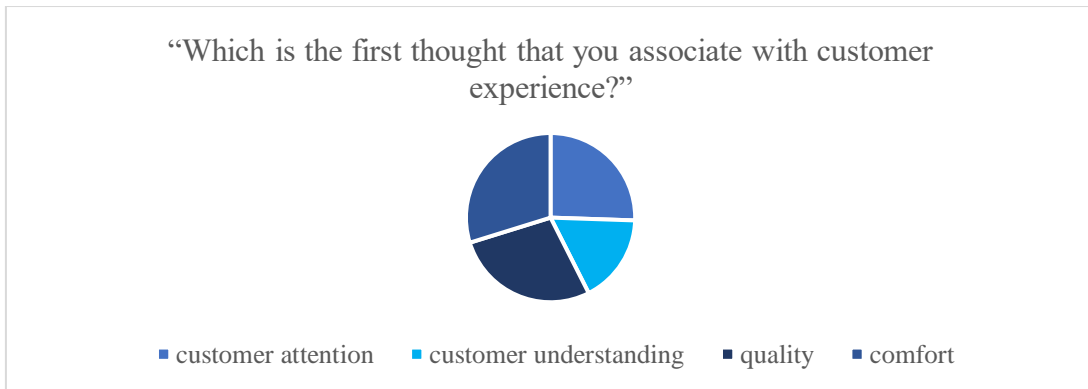
Research methodology

The research process follows the logical sequence specified in the research designs. In order to analyze how customers, react in the railway environment, a survey with potential consumers has been run. As for the investigation methodology, the present research refers to a survey that analyzes a current phenomenon within its setting using a questionnaire. In terms of research approach, the study is characterized as quantitative research since it uses correlation analysis to assess the sensitivity of respondents towards the given attribute. Therefore, a Google Survey was conducted using Kano's proposed framework¹¹⁹, based on functional and dysfunctional questions, which was then customized to the environment. It has been divided into three parts: the first part to identify the user profile for the services; the second part to contain seven statements that sought to assess customer satisfaction if a given attribute is considered; the third to contain five functional questions that sought to evaluate customer satisfaction if a given attribute was present. A scale ranging from 1 to 5 points, referring to how customers feel about the service offered, was employed to aid the respondents' understanding.

The survey has been taken on a population of 152 respondents, taken from travelers and exploiters of train services: The range of ages of respondents were 58,3% from 30-59, 29,8% from 16-23 and the other segments were equally distributed. Of the 152 individuals who provided gender information, they were equally distributed. Most of the individuals who completed the questionnaires were average travelers (41,2% of the population).

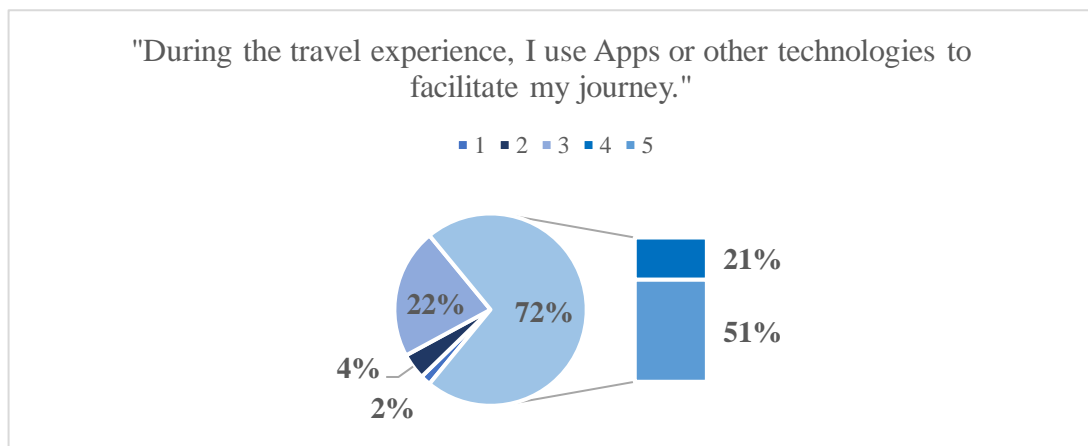
According to behavioral and psychographic questions, it has been asked “*Which services do you prefer?*” and “*Which is the first thought that you associate with customer experience?*”. Considering the latter in the graph below, it is clearly notable that customer attention and quality of series are a must for every business. As a matter of fact, the opinion of customers is the most objective opinion to rely on.

¹¹⁹ Kano et al. (1984)



Customer experience association for customers

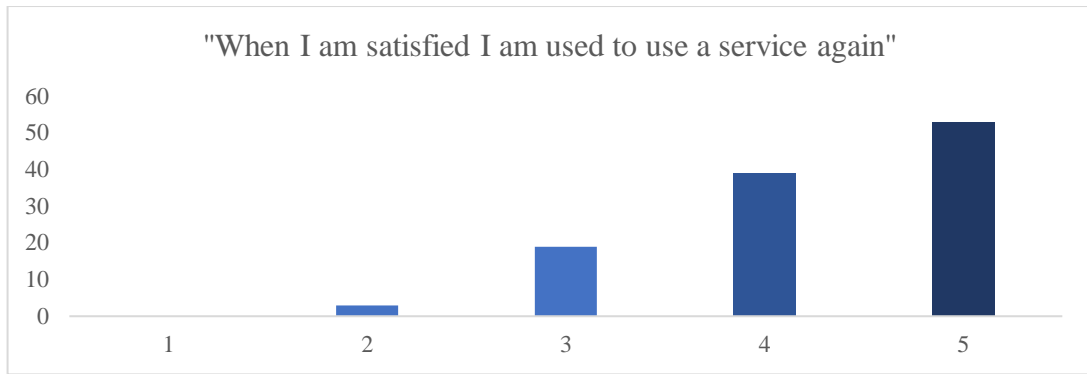
Moreover, the results of the survey, make it clear that many people are aware of the importance of technology for a better user experience: 50% of the population of the survey has rated the statement of great importance. Therefore, technology and AI integration (to better target the customers) are the two most relevant factors accounted. As already depicted in the research, technology has really great impact on customer journey of travelers.



Technology application influence on respondents

The survey also shows how customers will exploit the service repeatedly if it has satisfied them (84.8% of the population has confirmed the statement¹²⁰). Therefore, as the third research question has depicted, customer retention and loyalty are a consequence of customer satisfaction. It is clear from research that these elements have a positive correlation: once increasing one it increases the other.

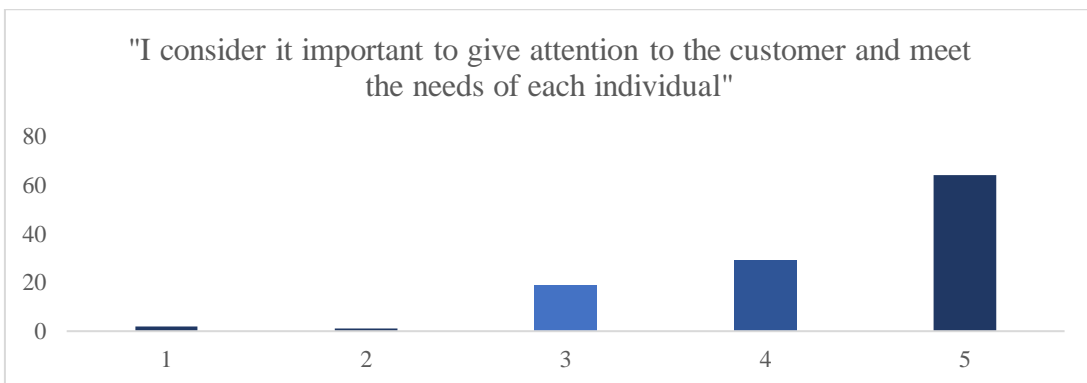
¹²⁰ Emerald.com. 2022



Customer retention is a consequence of customer satisfaction

Customer satisfaction is noteworthy in the travel and transportation business because it has consequences for customer loyalty's long-term sustainability. Only a small percentage of people profit from existing services, and even fewer people use them on a regular basis. Customer satisfaction has substantial management consequences; thus, the fundamental result of customer happiness is loyalty.

Despite all the previous considerations, the 62.5% of the population has underlined how much customer experience is fundamental for each business and how customer attention may be the solution to satisfy customers. Moreover, it has emerged that interviewers find that customer experiences targeted for the single customer has great importance on the decision of the journey (50% of the total population of the survey). As highlighted by the second research question of this study, customers give relevant importance to the personalized and targeted service.



Importance of targeted services

This clearly is a focal point that must be evaluated: customers use additional services only if are satisfied about it. Once a customer is satisfied, it is more willing to enjoy the same solution repeatedly. As a matter of fact, the third question depicts, the influence of an additional service to the customer decision of travel. Whether by car, by train or by a different railway company, a service that satisfies customers may affect

the customer decision. As shown below, the graph reflects that it is increasingly important this aspect of customer satisfaction.



Influence of Customer satisfaction on travel choice

Conjoint Analysis

To testify the reliability of the data collected, a conjoint analysis is considered. In the data collection stage, after obtaining data on respondents' preferences for a carefully selected set of bundles, to analyze the data observed, this analytical tool has been accounted. Conjoint analysis finds patterns with the rank order data: it identifies the customers relative importance of attributes and utility of attributes.

Based on the participants' responses, these calculations have been carried out through the statistical analysis tool Excel to understand which factors accounted the most in the variance customers' responses. Conjoint Analysis was used to assess the 7 statements and questions of the survey and determine the two main factors. The cumulative variance of the factors was not of importance for this goal.

		Ratings				
		1	2	3	4	5
Statements	1	11,20%	17,20%	24,10%	12,10%	35,30%
	2	2,6%%	4,30%	21,60%	21,60%	50%
	3	7,00%	20,90%	38,30%	20,90%	13%
	4	6,10%	13%	31,30%	34,80%	14,80%
	5	1,70%	1%	16,40%	25%	56%
	6	26,70%	28,40%	23,30%	11,20%	10,30%
	7	0%	2,60%	16,40%	35,30%	45,70%

Ratings considered for every statement respectively

Taking into consideration the 7 statements' ratings from 1 to 5, the correlation of the sample has been carried out, resulting to identify the three statements that express

higher correlation and therefore are more relevant for the study analysis.

If correlation is high consequently highlights the importance of statements. Since statements are rated from 1 (no importance) to 5 (of great importance), the more it is positively correlated the more is important for customers.

By looking at the statements with the highest correlation regarding each factor, it is possible to define them. Factor 1 is defined as “*Importance of technology applications*” and Factor 2 is defined as “*Importance of targeted services*”. Below, the most significant statements that led to those definitions are being shown. Moreover, the population has given significant evidence to the role of technologies as major trend of the new customer experience.

Correlation among statements	0,68267683
	0,93499358
	0,1611489
	0,49946236
	0,93053294
	-0,9161321
	0,9779539

Correlation of customer responses and ratings

As far as it may concern, the most relevant statements considered by customers, are the factors appointed in the three research questions of the previous study. As a matter of fact, considering the research already highlighted, the analysis has respectively depicted the three research questions accounted before. This convergency between studies and data analysis, is a clear example of the reliability of the study.

DISCUSSION

Results

The survey results were thoroughly evaluated in the previous section through reliability and conjoint analysis to ensure that the data were accurate. At this point, practical findings will be drawn to provide an answer to the research's fundamental question. The conjoint analysis has shown the most important factors that respondents has accounted as more important of the others. As a matter of fact, this analysis reflects the sensitivity of respondents to that given output or service.

As seen, the first analysis reported a significant effect on technology implication for customer satisfaction. This means that the first research question “*Does technology development enhance customer satisfaction?*” is answered. The survey performed with the sample of customers confirmed also for the travel and transportation environment is the same as what has been underlined in the literature written on the argument. As a matter of fact, the conjoint analysis has underlined the importance that respondents have given to this factor particularly.

For what the second research question is concerned: “*Does technology drive towards customer understanding?*”, also in this case the data reported a substantial effect of customers towards this issue. The level of significance depicted in the conjoint analysis allow us to consider it as valid and, thus, the research question can be assumed and confirmed by the survey and by the correlation analysis which has clearly identified this factor as one of the most relevant ones. In the survey described above, different were the questions and statements that have been asked to respondents, in which every respondent has been affected positively and coherently to the study proposed before.

The research question “*Is customer retention a consequence of customer satisfaction?*” is thus, taken in consideration too.

When the effect of those two elements is combined and it leads to a customer to be satisfied, customer retention is major effect of customer satisfaction, as clearly depicted by the results of the survey. Even if customers are, as the survey highlights, mostly attracted by the fact of travelling alongside with other people, as shown in the statement number 3 of the Survey 1, respondents are not too much inclined to socialize during the travel experience. This may contrast with all the study concerns, since its aim is to take evidence how much these technologies may lead to customer understanding and therefore customer retention.

Managerial implications

The present study has confirmed the important role attributed by the existing literature of the technology applications. This latter can make a unique customer experience, especially in the travel and transportation environment. In the railway industry, recreated in the survey, respondents resulted to be more affected by technology application leading to quality enhancement. This confirms the objective of the first

research question that the technology has great impact on customer satisfaction in a positive way.

Moreover, having a closer attention to customers, as resulted from the literature and subsequently from the survey analysis, is accounted as one of the fundamental factors that lead to customer satisfaction. The effect on the purchase intention of customers to take advantage of a specific solution is highly affected on how much a service is targeted. By using the technology applications such as Artificial Intelligence, companies may focus better on the customer needs and address services really targeted on each one of them. Thus, companies need to pay attention to the use of technologies, if they want an increasing and everlasting customer retention, but considering at the same time the need of each single customer. Currently existing services offered in this environment, from which customers expect a superior quality and attention to the customer, may be, at this time, not too advanced.

Future research and Limitations

Future research can fill some gaps and limitations present in this study. The study did not consider the component of “laggards” of the entire customer range that could find difficulties on taking advantage of the service or solution, since they are not used to technology applications. Future research can fill this gap by analyzing, for example, the sensitivity of older generations towards the use of services associated with technologies development.

IBM CASE STUDY: SOCIAL SEAT MAP

All the research conducted until now, has highlighted how much customer satisfaction counts for each business profitability. Taking into consideration the Italian railway sector, in which there is nowadays a strong competitive environment (mostly on the highspeed trains), the seeking of an edge over competition may make the difference in profitability and brand awareness. Therefore, taking into consideration what already analyzed about the antecedents of customer satisfaction, some considerations have been carried out. Considering these considerations, the research author, in collaboration with IBM, has proposed a new additional solution to implement and improve customer satisfaction in the railway business. This proposal describes the analysis and implementation activities to implement a cognitive “Social Seat Map”

feature (on the B2C channel), capable of suggesting to the customer the best seat in the train to share their journey with those with related interests. With this solution, in the railway industry, the focus on the customer to a greater extent by offering intelligent solution, will increase cognitive suggestions that can improve the entire travel experience and add significant value to the time spent on the train.

The solution involves the customer, because of his or her profile and relative interests, being offered seats adjacent to passengers who have, by authorization, shown the same interests. In addition, the solution makes it possible to create a profile of the traveler (even anonymous and not yet authenticated) that will in turn be "socialized" when other travelers book. The profile summarizes the traveler's interests and preferences among them. An algorithm will make it possible to identify the best carriage to match the interests of the traveler and passengers who have already chosen a seat. To do so, technology application is fundamental through AI, to analyze passenger profiles to suggest the best seat in the train for the customer to share their journey with those with related interests. This could be enabled by drawing the customer's profile by exploring their social profiles or verifying the best match between travelers who have already booked and the profile of the traveler who is booking.

The benefits that this solution imply are numerous. Taking advantage of this solution, the customers by meeting interesting new people may share the same interests and passions with, could acquire new know-how. This because enlarging the network that surrounds each person, the latter could enrich itself creating new relationships in professional and non-professional settings. Specifically in these historical moment in which sociality has been neglected due to sanitary emergency of COVID-19, the importance of rebirth and the eagerness to socialize has become more and more necessary for further development, both personal and professional.

An aspect that has not been observed for this solution and therefore it could be analyzed in further research is people willingness to socialize or to undertake conversation with their seat "neighbors". Future studies, thus, can focus on what may bring to two strangers to undertake a conversation and which is the propensity of travelers on engaging to network. Moreover, it can be analyzed if there are differences in the preferences taking into consideration also other elements of customer satisfaction antecedents, than the three ones studied in these pages. In this way it is

possible to know which of all the elements are considered more relevant for travelers and end users.

To identify the interests of travelers about this initiative, a survey was prepared.

The [Google Survey](#) has been carried out of a sample of 105 people, respectively selected by a range of IBM employees and travelers. Respondents, have been asked to give their own opinion about the solution asking: *“We want to enhance your travel experience by having you meet like-minded people on a professional or personal level, to take advantage of time on the road to make new connections. What do you think about it?”*.

The responses have been of great importance to identify the major issues and factors that customers have and face during the travel journey.

- The most interesting ones were: *“It is always interesting to meet new people, especially during travelling that can be considered wasted time. Changing this time into new possible opportunities would make every trip an adventure.”*
- *“I think it is a good project to make sure that our luggage is not only filled with clothes but more importantly with experiences and new knowledge.”*
- *“I think this is a very good idea, as there are important synergies between business and networking. This would optimize time and bring new opportunities to life.”*

In conclusion, to clarify the interconnection among the research appointed and the case study implemented by the author of the study, a summarizing table has been depicted. The table has, in addition, the objective to simplify and give a general overview of the major drivers that have been implemented during this study.

Research questions	Research study	IBM Case study
<i>Does technology development enhance customer satisfaction?</i>	The innovation of technology in its various forms, from automation and AI to digitalization of information strive to enhance customer satisfaction. Technology and data-driven , always-online world means deeper, sometimes real-time, connections to customers . Conjoint analysis confirms the importance of technology for customer satisfaction	The case study survey has highlighted how still can be important for respondents' technology application on services and experiences . The case study's solution exploits technologies as AI and social media platforms to gather data and to address better solutions to customers.
<i>Does technology drive towards customer understanding?</i>	For organizations looking to set themselves apart from the competition , providing a great customer experience is quickly becoming a top concern. Conjoint analysis confirms the importance of customer understanding .	With technologies as AI and in particular Watson Cognitive solution, it is possible to gather data for each customer and address possible solutions and selection on seat map for example.
<i>Is customer retention a consequence of customer satisfaction?</i>	Customer satisfaction is a primary predictor of customer loyalty . Satisfied customers are more likely to recommend services to others, which is the cheapest and most effective form of marketing and promotion through positive word of mouth , as well as the development of long-term loyalty to the company's services.	Through progressive profiling and engagement analysis in this solution it could be possible. The more a customer takes advantage of this solution and is satisfied about it, through the progressive profiling can achieve better and better performance of the solution .

CONCLUSIONS

The current research has focused on determining which aspects of customer satisfaction can attract customers in the railway industry. It merely covers travel and transportation in general, rather than focusing on one the most important sectors of its industry as the railway one. The literature on the role of customer satisfaction antecedents provides for a thorough understanding of the various variables that contribute to customer satisfaction and their implications on various phases of the consumer choice journey. Simultaneously, the literature has shown how important customer satisfaction is to businesses and which factors are considered as essential to running a firm toward profitability. Technology can significantly improve the customer experience in this industry, making it easier to use and opening new

possibilities. The literature has identified technology implementation as the first and most essential factor influencing customers' perceptions of a service or solution. The necessity of providing a personalized and focused experience for each consumer, on the other hand, has been highly stressed in literature. The focus on the client is critical for customer retention and favorable word-of-mouth effects. Customers are more comfortable on using services that may implement and ensure through technology a targeted service. This supports that, to capture customers' attention during the micro-moments that characterize service offering in the railway environment and propel them into the category of "significant purchases," the technology application and targeted services have an influence on their purchase and stay in their minds. As a result, while the technology implementation on services and customer understanding are the most important factors in influencing customers' perceptions of a certain service, its effect can be amplified and enforced by retaining customers, which are the foundation of each business, as well as expand the effect of word-of-mouth. When the technology implementation is paired with the customer understanding, customers in the sample were more ready to take advantage again of the given service and could talk about the service with others about their satisfied experience. In conclusion, by the first half of 2022, 60% of the world's population will be on social media applications¹²¹. Thus, activating the social seat solution proposed in the last chapter of this study, would create an immediate effect with a substantial increase in engagement of customers.

¹²¹ (Digital 2022: Global Overview Report — DataReportal – Global Digital Insights, 2022)

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