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The end of customer loyalty and the importance of customer experience in the telecommunications market in Portugal

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The end of customer loyalty and the importance of customer experience in the telecommunications market in Portugal

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Internship Report

Master's in Economics of Business and Strategy

Supervised by

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Brief bibliographical note

The candidate graduated in Economics from the School of Business and Economics of the University of Porto in June 2021.

Subsequently, in September 2021, he joined the master's in Economics of Business and Strategy at School of Business and Economics of the University of Porto, having carried out a curricular internship in one of the leading telecommunications companies, from January 23, 2023 to July 3, 2023.

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Abstract

As part of the master's degree in Economics of Business and Strategy at the School of Business and Economics of Porto University a curricular internship was carried out in one of the telecommunications companies, specifically in the commercial B2C area.

In 2022, in the Processes and Continuous Improvement commercial team, the Vender 2023 project was born, consisting of standardising and simplifying the sales processes in all the company's channels. For this it was necessary to redesign the current processes, identifying the main points of improvement and the general complaints of those who, on a daily basis, implemented those same processes. This project is highly impactful in two fields: time reduction and improvement of the customer experience. This second point will lead us to another topic that was analysed in this project, which is the end/reduction of fidelizations in the telecommunications contracts in Portugal.

During this process, several questions were raised, namely about the importance of this project for a telecoms market where the period of customer loyalty is expected to be substantially reduced or non-existent. In order to understand how the sign-up process might influence the customer's level of satisfaction with the service and how this level of satisfaction influences the customer's decision to stay with the operator, we decided to carry out a survey.

The results revealed the potential positive impacts that the project developed over these six months could have in the future. A positive relationship was identified between the quality of service and the level of satisfaction with the service, as well as the level of satisfaction with the service and the customer's willingness to stay with the operator.

Keywords

Vender 2023, Processes, Customer Experience, Loyalty period, Satisfaction

Resumo

No âmbito do mestrado em Economia da Empresa e Estratégia da School of Business and Economics da Universidade do Porto foi realizado um estágio curricular numa das empresas de telecomunicações, mais concretamente na área comercial B2C.

Em 2022, na equipa comercial de Processos e Melhoria Contínua, nasceu o projeto Vender 2023, que consistia em uniformizar e simplificar os processos de venda em todos os canais da empresa. Para isso foi necessário redesenhar os processos actuais, identificando os principais pontos de melhoria e as queixas gerais de quem, no dia a dia, implementava esses mesmos processos. Este projeto é altamente impactante em dois campos: redução de tempo e melhoria da experiência do cliente. Este segundo ponto leva-nos a outro tema que foi analisado neste projeto, que é o fim/redução das fidelizações nos contratos de telecomunicações em Portugal.

Durante este processo, foram levantadas várias questões, nomeadamente sobre a importância deste projeto para um mercado de telecomunicações onde o período de fidelização dos clientes é substancialmente reduzido ou inexistente. Com o objetivo de perceber de que forma o processo de adesão pode influenciar o grau de satisfação do cliente com o serviço e de que forma esse grau de satisfação influencia a sua decisão de ficar com o operador, decidimos realizar um inquérito.

Os resultados revelaram os potenciais impactos positivos que o projeto desenvolvido ao longo destes seis meses poderá ter no futuro. Foi identificada uma relação positiva entre a qualidade do serviço e o nível de satisfação com o serviço, bem como o nível de satisfação com o serviço e a vontade do cliente em permanecer no operador.

Palavras-chave

Vender 2023, Processos, Experiência de cliente, Período de fidelização, Satisfação

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List of acronyms and abbreviations

ANACOM – Autoridade Nacional de Comunicações

DD – Débito Direto

FE – Fatura Eletrónica

I&W – Inbound & Web

KM – Knowledge Management

PROC – Pedido Rescisão Operador Concorrente

VD – Vendas Diretas

Glossary

ANACOM – Autoridade Nacional de Comunicações

I&W – Commercial call centre used when the customer asks to be contacted or contacts the company

KM – Platform used by all employees and partners. This is where you will find the description of the processes and all the use cases for all the channels.

Moderno – Large-scale partners that sell residential packages

Outbound – Call centre used to contact customers with personalised offers

Revenda – Small partners that sell residential packages

UNI – Platform used to record the entire sales process in Store, Inbound & Web and

Vendas Diretas - Commercial team selling door to door

+Vendas – Platform used to record the entire sales process in Moderno and Revenda

1. Introduction

Operating in such a competitive and innovative market, telecommunications companies in Portugal have to be constantly changing and updating. With this in mind, a project was born in the company that aims to greatly change customer journeys. This project, which ends up being a way of keeping up with the competition, was created with the aim of taking a step forward in the commercial area of the company and, as we started out behind the competition, we wanted to go further than what was done in other companies. Since it is a competitive market and the most profitable customers are those who stay with the company for a long period of time, it is important, among other things, to update our customer service and create a good image for customers, since this has a strong impact on the customers' perception of the brand.

The project then began with the identification of an opportunity: to change the software used by the company's sales channels. The new software brought new functionalities and new opportunities. With this in mind, a problem common to all the company's sales channels was identified: the process of signing up to the service was extremely complex and time-consuming. It was believed that a more standardised process between channels, with fewer process outputs and more optimisation, would have positive implications for the quality of service, making it easier for salespeople to focus more on the customer and not on the computer process.

In order to move forward with the project, we decided that it was important to visit the sales channels, understand the common difficulties faced by salespeople, collect customer complaints and take the opportunity to measure the average time taken to sign up. Once the visits were over, we set to work on decompexifying the process, taking into account the inputs received during the field visits. By redesigning the process and the different blocks that make up the process, we were able to substantially optimise the process as a whole. The results are not yet visible as the new process has not yet been implemented in the channels.

During the internship period, some doubts arose given the importance and usefulness of this project in a different market environment. During these six months, the issue of reducing/ending the loyalty period has gained momentum and it is therefore important to

understand how operators will adapt to this change as, naturally, this reduction will allow for greater customer churn.

With the questionnaire we wanted to understand how the level of satisfaction can be related to the quality of service and how the quality of service can be influenced by the reduction of time and decomplexification of the process when signing up. In addition, we wanted to understand how open customers are to a completely digital sign-up process, without any direct contact with a salesperson. This is important as it is also a project under development at the company and falls within the scope of the project being developed. Finally, we wanted to understand how the current loyalty period is viewed by customers and how open they are to reducing it.

Chapters, sections, and subsections will be used to break up the current document's outline. The chapter on the literature review will come next in the framework. When they become crucial constructs for this study, ideas like loyalty, the churn phenomenon and customer retention will be discussed and defined. The methodology will be covered in the third chapter, where will be a brief presentation of the company and the sector, and the results of will be showned and explained in the fourth chapter. Ambos os capitulos estarão divididos em dois pontos chave: Research – Action and Questionnaire. Finally, in the last chapter we will discuss the findings and implications of the project for the future of the company.

2. Literature review

2.1. Loyalty

Customer loyalty refers to the degree to which customers feel attached and committed to a particular brand, product or service, and continue to do business with that company over time. It is an essential concept in marketing (Ganesh et al., 2000), because research has shown that loyal customers are more profitable (O'Brien and Jones, 1995). It may be interpreted as a positive disposition to a brand that transcends transactions and makes repurchase likely in the face of adversity (Aspinall et al., 2001).

Reinartz and Kumar (2000) believe that the most loyal consumers are also your brand's best ambassadors. Naturally, word-of-mouth advertising is incredibly successful, so many businesses justify their loyalty program expenditures by focusing on generating profits from referrals rather than from existing consumers.

The definitions of contributions and benefits vary amongst loyalty programs. The traditional paradigm entails the accumulation of advantages for future use or benefits attributable a posteriori during the duration of the good or service's permanence and use. In some instances, the idea appears to be reversed, requiring an upfront payment to gain access to a list of perks for a predetermined amount of time. The loyalty programs offered by airlines and grocery stores are two examples of the first category. By using the company's services, the client collects points and status that can be exchanged for rewards inside and outside the organization, depending on the design of the instrument. The second scenario occurs more frequently in businesses that run network services, such as credit cards in the financial industry, or in businesses that provide telecommunications services. For a predetermined amount of time, the customer receives access status, which he may then renew.

Loyalty contracts typically found in the telecommunications business tend to be of the latter sort. In exchange for the cost of the network connection equipment and the contractual commitment to remain for a pre-established amount of time, the customer can access more favourable financial circumstances in the provision of the service. Loyalty in this scenario has, however, the particularity of allowing the consumer to objectively evaluate the benefit, as the corporation commits to the terms of service during the entire relationship. In other words, there is no doubt over prices and quantities during the life of the contract.

Loyalty campaigns, contractual or non contractual, aim to retain the customer for as long as possible and prevent the customer from changing the current service for a competitor's service. *“Customer retention is the customer continuing to transact with the firm.”* (Ascarza et al., 2018).

2.2. Churn

The loss of significant customers to competitors is a phenomenon known as customer churn that particularly impacts service providers for telecom firms. The telecommunications industry has lately seen a number of changes, including the market's deregulation, which increased competition, new services, and new technologies. The massive loss of telecom services brought on by customer churn makes it a very severe issue (Ahmed et al., 2017). In some customer-firm interactions, understanding customer churn becomes essential (Kumar & Reinartz, 2016).

Customers who churn fall into one of several categories based on the causes of the phenomenon: involuntary churners are those to whom the company decides to stop the services due to the non-compliance with legal obligations, such as not paying bills, among other things. Involuntary churners are considered the easiest type of churners to determine. They may be left from the subscriber list at the company's discretion. The number mentioned above includes those conned into falling for the fraud by not paying or utilizing the phone. (Ewieda et al., 2021).

Voluntary churners are those who voluntarily leave the services, voluntarily due to dissatisfaction with the current services provided, or incidentally due to external factors beyond their control (Jain et al., 2021). "Incidental" and "deliberate" churn are the two main categories of voluntary churn. Accidental churn occurs without the customers' knowledge, although the real cause is something that has occurred in their lifetimes. For instance, location and financial circumstances have changed. Customers seeking newer or better technology, the economics, price fluctuation, excessive pricing, a lack of rewards for customer loyalty, poor support, social or psychological factors, and/or amenities are all examples of deliberate change that occurs in technology. The churn section is working to find solutions for deliberate churn (Ewieda et al., 2021). Due to the intense competition in the telecom industry and the large number of service providers that customers can select from and move to, churn is highlighted as a crucial service factor (Ahmed et al., 2017).

2.2.1. Churn management

“Churn management is the term that has been adopted to define customer turnover. More specifically, churn management is the concept of identifying those customers who are intending to move their custom to a competing service provider”(Hadden et al., 2007). Reducing subscriber losses overall is the aim of churn management because subscribers boost profitability by delivering a consistent and lucrative clientele (Shabaan et al, 2012). This is done by using preventative and retention actions (Kozak et al., 2021).

According to Oghojafor (2012), service providers have two options for reducing churn: a targeted approach or an untargeted one. An untargeted approach is when a provider uses mass advertising or his superior service to increase customer loyalty. A targeted approach, on the other hand, is when the provider tailors a service or incentive specifically to a customer who has been identified as potentially churning.

2.3. Customer retention

Customer retention illustrates the logic of a long-term connection by representing the customer's intention to make future purchases from the company that provides the service (Alkitbi et al., 2020). Customer retention has been found to be a top priority for businesses that utilize relationship marketing since it produces a number of economic benefits (Ginn et al., 2010). “Customer retention survives when the companies can fulfill customer expectations and additionally maintain it in long-term relationships to ensure long-term buying decisions”(Alkitbi et al., 2020).

Due to prior purchases made with that service provider and levels of satisfaction, the repurchase intention can be characterized as a repeat buying behavior with that service provider (Tena-Monferrer et al., 2022).

Relevance of customer retention is in part linked to company advantages. According to Gronroos, keeping existing customers is far less expensive than finding new ones (Gronroos, 1994). Also, retained consumers are more likely to make larger purchases than freshly acquired customers and to refer other people to the company as clients (Ginn et al., 2010).

Customer satisfaction, the outcome of comparing customers' expectations and the actual service provided, is referred to as a targeted strategy and has been shown in prior research to have the greatest influence on customer retention (Lemon & Verhoef, 2016). Due to the intense competition in the telecom industry, it is crucial to achieve client satisfaction in this market to prevent losing clients to rivals. According with Abbad (2022), evidence from earlier studies suggests that retained customers are not always satisfied.

According to Ansari (2020), “high quality of services leads to increased sales and profitability” and because of that, quality of service can be seen as a competitive advantage that allows companies to stay competitive through customer satisfaction (Oghojafor et al., 2012)

2.4. Customer satisfaction

Customer satisfaction, in general, relates to how a customer reacts to their degree of fulfillment and how they assess that fulfillment after receiving advantages from a good or service based on factors that are significant to them (Oliver, 1997). Customer satisfaction should rise as product and service qualities are improved. It is anticipated that higher customer satisfaction would result in improved client retention. Gaining better customer retention increases profits (Anderson et al., 2000).

Customer satisfaction can be characterized in two different manners: transaction-specific satisfaction and cumulative satisfaction (Hansen, 2012). The post-choice evaluation of a particular transaction involving a product or service experience is referred to as transaction-specific satisfaction. On the other hand, cumulative satisfaction denotes an overall assessment of a certain good or service over time, depending on the use and total cost of the purchase (Veloutsou et al., 2005). In this project, the focus will be on transaction-specific satisfaction, namely when subscribing or changing the residential TV service.

2.4.1. Outcome vs Process Approach

The two approaches are important for both consumers and the firms offering the services. As a result, consumer perceptions of the procedure or the result may be the focus of the examination of satisfaction. The outcome-oriented approach “construes consumer satisfaction as an outcome occurring as a result of the consumption experience” (Yi, 1990). This perspective is supported by the idea that consumer satisfaction is the overall psychological state that develops when the consumer's earlier feelings towards their consuming experience are combined with the emotion around unmet expectations. (Oliver, 1981). Yet, it might also be argued that the actual process of "meeting expectations" is crucial, indicating that a significant cumulative evaluation process underlies client satisfaction during a service experience (Yi, 1990). This is known as a process-oriented approach. Here, the method is prioritized over the psychological state of contentment that results from it.

2.5. Impact of waiting time

According to Bielen and Demoulin (2007), companies are concerned about the length of their lines because they believe it has a negative impact on how customers perceive their level of service. Customers' tolerance for delays is decreasing, it is undeniable that a service organization can gain a competitive edge by focusing more on waiting (Pruyn & Smidts, 1993). These authors also noted that frustration caused by waiting does not just seem to impair one's contentment with the service, but also one's opinion of how kind the staff is.

2.6. Negative affect

Negative affect is a negative antecedent to satisfaction. Due to the customer's first unfavorable reaction brought on by the initial service failure, the satisfaction evaluation of the service recovery may suffer as a result. Additionally, it's possible that the first negative effect for the same reason may have a negative effect on future intentions to make another purchase. (Andreassen, 2000).

2.7. Telecom market in Portugal

2.7.1. ANACOM

The Portuguese telecommunications market is extremely competitive, made up of several companies and regulated by ANACOM.

ANACOM's objectives are to "regulate the communications sector, including electronic and postal communications and, without prejudice to its nature as an independent administrative body, to assist the Government in these areas"(ANACOM, 2023). The regulator has a variety of regulatory, supervisory, enforcement, and punishment powers to achieve this: impose specific obligations and verify compliance with them, assign, modify and revoke rights of use of frequencies and numbers, issue declarations and titles for exercising the activity, carry out registries of service providers and maintain, update and disclose the registries of entities subject to its regulation, issue professional titles of planner and installer, as well as certify training entities for planners and installers, provide information, guidance and support to consumers, implement and verify compliance with laws and regulations, monitor the activity of entities subject to its supervision and the functioning of communications markets, inspect and assess, on a regular basis, the records of complaints and grievances of consumers and other users, determine or promote the conduct of audits and carry out inspections and enquiries, supervise compliance with the obligations to which, under the terms of the law, regulations, other applicable standards and determinations issued by it, the recipients of its activity are subject, supervise compliance with contracts that relate to universal or public service obligations, carry out all acts necessary for the processing and punishment of infringements of laws and regulations whose implementation or supervision is incumbent upon it (ANACOM, 2023).

2.7.2. Competition

The telecommunications market in Portugal is made up of several companies, but only four operate in the cable television service: NOS, MEO, Vodafone and, more recently, Nowo. It is an extremely competitive market, and NOS, MEO and Vodafone are clearly the biggest players in the different services provided (table 1).

Table 1 – Market shares in the telecom market in Portugal

Services	NOS	MEO	Vodafone	Nowo
Fixed Voice	34.3%	41.8%	20.5%	2.7%
Mobile services	28.9%	39.0%	28.6%	2.0%
TV	37.0%	41.1%	18.8%	2.9%
Service packages	35.5%	41.1%	20.3%	2.9%

Source: Author's elaboration with data collected from ANACOM

We can also understand that, observing the Pordata data, the market is quite saturated. According to ANACOM, there are approximately 4.5 million cable TV services installed, and in 2021 there would only be 4.1 homes. Even if there had been an increase in accommodation during 2022, we can see that in general there are no new homes to gain customers but strong competition to 'steal' customers from rival operators, tapping into the theme of customer churn mentioned above.

2.8. Differences in the duration of the contractual relationship in Portugal and in other european countries

In the Portuguese market, there are usually four options for consumers: a contract without fidelity or with fidelity for 6, 12 or 24 months. The common practice is for the customer to be loyal during the 24 months period since the prices practiced in the other circumstances go up substantially and there are costs for the installation and activation of the service (ANACOM, 2023).

In France and Spain, according to the offers available on their respective websites, the main operators (Vodafone and Orange in Spain and FREE, SRF and Orange in France) operate a policy of only one year of loyalty while Vodafone Italia has given up loyalty periods.

2.9. Advantages of the termination or reduction of the minimum contractual period

2.9.1. Market competition

Competition is an essential and present factor in all world markets, even in those that operate under monopoly because there are always potential entrants. We can start by describing a competitor as the firms whose strategic choices directly affect one another (Besanko et al., 2013). For example, in the Portuguese telecoms market, if NOS lowers the price of its cheapest residential package, we would expect MEO and Vodafone to consider responding to that change.

Market competition forces incumbent companies to seek competitive advantages over their competitors in order to increase their market power and ultimately their profits. However, if customers are contractually bound to one of the players, this search for competitive advantage tends to diminish, as current customers are tied up and the range of new customers available is reduced. This decrease in competitiveness naturally has the opposite effect to that of increased competition and free customer churn. The search for competitive advantage translates into an increase in innovation in this market. *“Companies achieve competitive advantage through acts of innovation. They approach innovation in its broadest sense, including both new technologies and new ways of doing things”* (Porter, 1990). *“Innovation includes the technical, design, manufacturing, management and commercial activities involved in the marketing of a new (or improved) product or the first commercial use of a new (or improved) process or equipment”* (Freeman, 1982)

2.9.2. Economical growth

Innovation is crucial for economies' competitiveness and economic success. Supporting economic growth and employment requires the process of creation, trade, and effective commercialization through innovation activities. Innovation-related activities increase an economy's competitiveness and promote societal prosperity. (Vuckovic, 2016).

All economic operations involve innovation, which includes not just new goods and technology advancements but also advancements in marketing, distribution, and logistics, among other fields (Fagerberg et al., 2009). Considering Romer's (1990) basic theory of

endogenous technological change, growth is driven by technological change, arising from investment decisions.

According to Schumpeter (1942), the economy is driven by the process of creative destruction, which involves the constant replacement of old products, processes and technologies by new ones. This process is driven by competition between firms, which seek to innovate to gain competitive advantage and maintain their position in the market. Creative destruction has two main components: destruction and creation. Destruction occurs when obsolete firms are eliminated from the market, while creation occurs when new firms emerge with new technologies, products or more efficient processes. According to Schumpeter, creative destruction is an inevitable process in the market economy and is a source of long-term economic progress.

2.9.3. Switching costs

Switching costs can be defined as “the cost involved in changing from one supplier to another” (Heide & Weiss, 1995). These expenses could be, for instance, the price of learning how to utilize a new good or service, the price of uninstalling a certain item and installing another, the price of acclimating to a new setting or system, and so forth. When consumers want to transition from one good or service to another, switching costs can be a major roadblock. A consumer could be less likely to switch to a competitor even if that competitor offers a better product or service if they have already invested a lot of time and money in a particular product or service. This is due to the possibility that the cost of moving to the competitor's good or service would be prohibitive. In the case we study, we must also contemplate the cost that the customer needs to pay to get his contract terminated with his current operator, which, in many cases, may cost much more than the above costs. According to Dwyer et al. (1987). If all else is equal, a customer will prefer to keep his current relationships in order to save cost on switching costs, such as the transaction-specific investments he put in them.

Existing loyalty practices decrease the fraction of customers who have the choice of switching suppliers, which reduces the restraint on market prices, innovation, and service quality. As a result, there are fewer incentives for businesses to compete, which leaves customers more susceptible to market power.

3. Empirical Design

The methodology, data gathering techniques, and appropriate methods of analysis will all be established and justified in this chapter.

Chapter 3. It is divided into two main sections: section 3.1, which covers the work carried out over the 6 months of the internship, based on an Research - Action methodology, and section 3.2, which covers the questionnaire carried out.

3.1. Research - Action

3.1.1. Curricular Internship

The curricular internship was carried out at one of the telecommunications companies in Portugal, having started on 23 January 2023 and ending on 3 July 2023. The internship was of hybrid nature, three days a week in the office and two days at home.

The objectives of the internship were to identify which KPIs already exist to monitor the processes in place and to build a model for evaluating the adoption of processes based on these same indicators. In addition, we also wanted to define an actionable model for the use of this information, allowing us to capture value on top of it (e.g., measure which stores/channels are doing better and worse and which need refreshing/training, to know the average execution times of the processes and on that basis, identify which processes need to be revised/improved, etc.). Finally, to grant the simplification and standardisation of the processes in the commercial channels, guaranteeing the best customer experience, the goal was to create a single voice of the company, that is, regardless of the channel chosen by the customer, what would be said and offered would be the same on all channels. Besides this, the company also wanted to develop the "customer cart". The potential customer could start his subscription process on any channel (digital, shop, I&W, Revenda, Moderno or Direct Channels) and end up on another channel, and what he started would be automatically saved and only what had already been done would have to be continued. The objectives described above are part of the Vender 2023 project that began in October 2022. At the start of the project, the goal was merely to readjust the descriptions of the existing processes in KM with what was actually happening on the ground. At that time, the moment at which some points of the sales process appeared in the description in KM did not coincide with the moment at

which they were actually carried out in the shop, call centre and direct sales. However, still in 2022, a specialised I.T. team was made available, which made it possible not only to readjust the KM, but also to change the processes in the field. In this way, we began to redesign the process of adhering to and changing the product, with the objective of making it more effective and efficient.

3.1.2. Host Institution and business channels

The company that welcomed me for my curricular internship operates in the Portuguese telecommunications market. This company is one of the leading telecommunications operators in Portugal, offering pay-TV, high-speed internet and fixed and mobile phone services to residential and business customers. It has an extensive fibre optic and mobile network, and offers customers access to a wide range of entertainment content, including sports, movies and TV series, as well as the option to rent or buy movies through its video-on-demand platform. In addition, the company also offers IT solutions and data services for businesses and institutions, as well as cyber security and cloud services.

At the beginning of the project, the goal was to visit all the commercial channels of the company: Stores, I&W, Outbound, VD, Revenda and Moderno. However, after an analysis of all channels, it was realized that we would not achieve a relevant number of reservations in the Moderno and Revenda, so there is no kind of time measurement in these channels.

The first channel to be visited was I&W, every working day, during February 8, 2023 and February 24, 2023. During this period, hundreds of calls were listened to, not all of which were discarded because they did not fit into the scope of the project. During these days, it was provided material that allowed me to listen to the entire call live while observing the progress of the process on the computer, next to the operator.

The second channel to be visited was the shops. The visits took place during February 27 and March 17 and March 21. Each visit was previously planned with each shop manager in order to inform the shopkeepers of my presence and what my goal was. It was possible to attend dozens of appointments and to observe the evolution of the computer process.

This was followed by a visit to Outbond. Having the same type of operation as the I&W, the process was very similar. It was possible to listen to the calls live while watching the process unfold on computer. The visits to Outbond took place between 22 and 31 March 2023.

Finally, there was also time to monitor, in the field, the VD colleagues. However, due to the specificity of the channel, it was not possible to collect enough observations to be used for this project.

3.1.3. Contextual framework of the sector

There are various operators on the Portuguese telecom market, but the three biggest are MEO, NOS, and Vodafone. These providers also provide related services such cloud services, voice over IP, and security services in addition to fixed and mobile phone, broadband, and television services.

The Portuguese telecommunications sector has been characterized by fierce competition among operators, with prices playing a significant role in consumer decision-making. To provide faster broadband speeds and better TV services, operators have been investing in fiber optic networks.

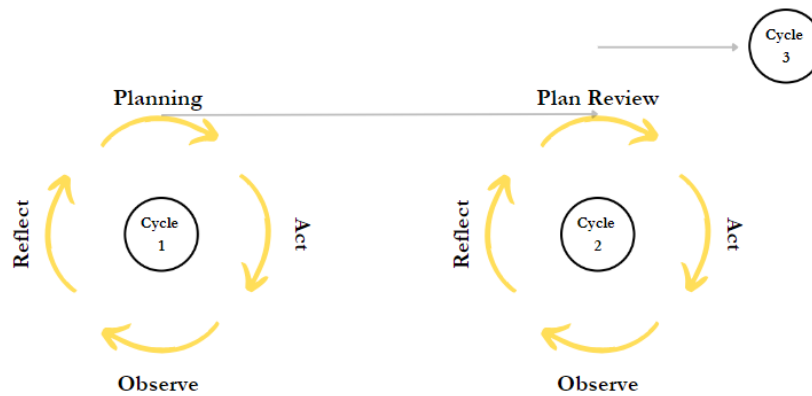
Customers' loyalty has increased as a result of operators' recent introduction of convergent package deals that integrate fixed and mobile telephony, broadband, and television services. Regulators are under more pressure than ever to encourage competition and guarantee that customers can obtain high-quality services at fair pricing.

In order to better understand the importance of good and efficient customer service, an online survey was carried out. With this survey we wanted to understand whether the literature actually represents what happens in the Portuguese market and whether a good first impression and good customer service have a positive impact on the consumer's perspective of the operator.

3.1.4. Methodology

This study's purpose is to analyze the impact of the decrease in customer care time in cases of adhesion of new customers to TV, net and voice packages. Concretely, the goal is to answer to the following research question: “By redesigning the joining process, are we able to reduce the average service time and cost per membership?”

Figure 1 – Spiral of cycles



Source: Based on Coutinho et al., 2009

The work carried out during the internship period was based on a Research-Action structure. A family of research methodologies known as Research - Action (RA) can be characterized as including both action (or change) and research (or understanding), based on a spiraling or cyclical process that alternates between critical reflection and action. Subsequent cycles then improve the methodologies and experience (knowledge) gained in the prior cycle. The information and its interpretation in light of the knowledge and experience gained during the previous cycle (Coutinho et al., 2009). The four phases of the RA approach can be summed up as preparation, action, observation, and reflection. These phases grow continually. Figure 1 illustrates how an AI process is not limited to a single cycle.

According to Coutinho et al. (2009), RA is fundamentally a method of study that is driven by the desire to address practical issues. According to Cohen & Manion (1994) and Descombe (1999) we can point to 5 characteristics of this methodology: collaborative and practical as it incorporates all participants in the process, it does not only apply to the theoretical realm and the description of reality but also to action, as is always a purposeful act and must be connected to change and critical, self-evaluative, and cyclical as research

entails a spiral of cycles in which initial discoveries generate possibilities for change that are then put into practice and appraised as an introduction to the next cycle.

During the initial part of my internship, I was in the field visiting the commercial channels in order to quantify the average attendance time, which was part of the planning phase as it also served to realise current difficulties for both salespeople and customers. Once the channels to be visited had been chosen, and in order to determine the best method for analysing the data, we resorted to: face-to-face timing, through the reading of a digital electronic stopwatch.

A quantitative approach was used to address the research topic and fulfill the goals of this study. Given that the data was gathered from a real context, the Portuguese telecom company where the internship took place, this study used a case study methodology. The timing was carried out with the call centre operators, shopkeepers and door-to-door salespeople informed of what was happening. It was always mentioned that the project did not configure any type of audit and that, therefore, they were not being evaluated at that moment.

Considering the time limitation imposed by the duration of the curricular internship, it was not possible to do the same procedure after the change designed in the attendance process. Taking this into account, an estimate was made considering some data previously collected by the company.

3.2. Questionnaire

As mentioned above, during the internship period, some questions arose that involved the usefulness and importance of the project that was being developed, but were not taken into consideration when the project began. The doubt that arose related to the possible reduction/extinction of the loyalty period of service contracts and how the project developed could have a positive impact, or not, on customer retention and satisfaction.

With this in mind, we decided to develop a short questionnaire in order to try and answer the questions raised during the internship period:

Table 2 – Relationship between questionnaire questions and literature review

<i>Questions of the questionnaire</i>	<i>Literature Review and Author's</i>	<i>What we are trying to answer</i>
I'm satisfied with my operator's service	- Ganesh et al., 2000	Does quality service and support generate a closer relationship between customer and operator?
I feel a connection to my operator		
I would recommend my operator to friends and family	2.2. Churn & Customer satisfaction - Jain et al., 2021 - Anderson et al., 2000 - Reinartz and Kumar, 2000	Is a satisfied customer more likely to recommend the service?
I liked the sign-up process with my operator	2.6. Negative affect - Andreassen, 2000	Does the quality of customer attendance have an impact on the perception of service quality in the eyes of the customer?
I intend to stay with my operator in the future	2.3. Customer retention - Tena-Monferrer et al., 2022 - O'Brien and Jones (1995)	Is a satisfied customer less likely to switch services?
I find the sign-up process in traditional channels (shop/telemarketing) very complex and time consuming	- Andreassen, 2000.	Would it be interesting to do the whole process online without having to contact the operator? Is reducing the time it takes to sign up an improvement in the quality of their customer service? Is the reduction in waiting time in the shop an improvement in the quality of service?
Waiting times at telecoms shops are high		
Do you think the loyalty period brings you any benefits?	2.8. Differences in the duration of the contractual relationship in Portugal and in other european countries - ANACOM	What is the current customer perception of the loyalty period? Do customers want the loyalty period reduced?
Would you be willing to slightly increase the price of the service if it reduced your loyalty period to 6 months?		

Source: Author's elaboration

Taking into account some digital questions and the fact that this is a forward-looking project, it was decided that the questionnaire would be presented to young adults under the age of 30 who have a TV + Net + Voice service at home. This is because the millennials (young adults at the moment) heavily utilize social networks, mobile technologies, the internet, connection, and interactive media in their daily lives (Pew Research Center, 2010). Generation X members, as opposed to millennials, were not born into the digital age although they have adopted many parts of new technologies at some time in their life. Those from Generation X could be referred to as "digital immigrants" as a result, given they were not born into a technologically advanced family and did not grow up around it (Prensky, M., 2001).

The questionnaire was broken down into "Yes" or "No" questions (type A) and statements which asked for a level of agreement (type B) ("Strongly agree", "Agree", "Disagree" and "Strongly disagree"). In order to analyse the responses in detail and calculate the measures of association between responses, values were assigned to the different types of response. For type A questions, we assigned 0 to "No" answers and 1 to "Yes" answers. For type B questions, 1 was assigned to the "Strongly disagree" answer, 2 to the "Disagree" answer, 3 to the "Agree" answer and 4 to the "Strongly agree" answer. When the respondent answered "I don't know", the answer was not counted.

Pearson's correlation coefficient and Spearman's correlation coefficient were used to calculate the measures of association between two responses. Pearson's correlation coefficient is a statistical measure that assesses the linear relationship between two quantitative variables. It assesses how strong and which way this linear link is going. Pearson's correlation coefficient is calculated as follows:

$$\rho = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2} \cdot \sqrt{\sum_{i=1}^n (y_i - \bar{y})^2}} = \frac{\text{cov}(X, Y)}{\sqrt{\text{var}(X) \cdot \text{var}(Y)}} \quad (3.1)$$

Spearman's correlation coefficient, also known as Spearman rank-order coefficient, is applied to two variables that have at least an ordinal scale or a connection that is

monotonic but not necessarily linear. Given two sortable observation samples, each of their values is changed according to the sort order/rank. It also applies when there are non-normal variables, which do not satisfy the conditions of the Pearson coefficient test. Spearman's correlation coefficient is calculated as follows:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)} \quad (3.2)$$

Where d_i represents the difference in ranks corresponding to each pair of observations x_i, y_i

The range of the correlation coefficient is from -1 to 1, where a complete positive correlation of 1 denotes a perfectly positive linear relationship between the two variables. When one variable rises, the other rises in proportion as well. The two variables are perfectly negatively linearly coupled when the correlation coefficient is -1, which denotes a perfect negative correlation. One variable reduces in proportion to the other when it rises. Zero means there is no linear association. The two variables are therefore not linearly connected.

In section 4.2. the results of the survey will be presented and discussed. The aim is to see if the answers obtained corroborate what is said in the literature and to see if the project developed during the internship could help the company in the near future, where it is hoped that the loyalty period will be reduced/ended and that customers will have greater freedom to change operator.

4. Results

4.1. Research - Action

4.1.1. Main objectives

The main objectives of the project were the standardisation and simplification of processes in all channels, namely the adhesion and alteration process, as well as the correction of the process description in KM.

The simplification and standardisation of processes was born with the implementation of the digital channel. In the digital channel, customers may, from home, carry out the entire process of subscription to residential packages without having to go to the shop or call any line at any time. This way, the digital subscription process will have to be somewhat simplified since it will be used by any customer wishing to subscribe. The idea behind simplifying the processes was that, in other words, if we can design a simple and fast digital joining process for customers, we will also take that simple and fast process to our commercial channels, this way we can save service time, process complexity and improve customer experience. When redesigning the process, we also thought about the standardisation and ominality of the process, as explained above. This standardisation also covered the front ends used.

In addition, it was identified that the process descriptions in KM were by now, outdated. It was therefore important to understand how the process was actually executed on the ground, to understand the difference with what was written in the KM and, in the future, to update the KM for the new attendance model to be designed.

4.1.2. KM vs Field

The project started, as mentioned above, with the objective of improving the description of the processes in the KM platform. This task was very important as the KM is a fundamental tool for all operators, namely for those who are still in a learning phase and are quite dependent on the KM.

The first step was to study in depth the description of the joining and changing the product's process in KM. To do that, we divided the processes of joining and changing the product into several macro blocks and understood their order, as can be seen in Figure 1. This process was done for all the channels, but Outbond does not have this description available. Figure 1 shows, then, the order in which the processes were described in KM, in the case of Inbound & Web and Stores. Note that Outbound does not have a process description in KM.

An important aspect to highlight is that these two channels are regaining weight in the company's sales. If we look at 2021, 48% of sales of residential packages took place in these two channels. In 2022, the figure was 54% and by April 2023, I&W and Stores represented 58% of all sales.

Figure 2 – Initial order of macro blocks in KM compared with the field

I&W		Stores	
KM	Field	KM	Field
1. Client data validation	1. Client data validation	1. Client data validation	1. Client data validation
2. Client validation	2. Consult adress	2. Consult address	2. Consult address
3. Consult address	3. Technology	3. Consult offer	3. Technology
4. Consult offer	4. Scoring	4. PROC	4. Scoring
5. Validate fraud	5. Consult offer	5. Technology	5. Consult offer
6. Scoring	6. Portability	6. Register sale	6. Sell SIM card
7. PROC	7. Update client data	7. Portability	7. PROC
8. Technology	8. Schedule	8. Sell SIM card	8. Document collection
9. Register sale	9. FE/DD	9. Update cliente data	9. Update cliente data
10. Portability	10. Authorisations	10. Scoring	10. Schedule
11. Explicit confirmation	11. Resume	11. Schedule	11. FE/DD
12. Schedule	12. Explicit confirmation	12. FE/DD	12. Authorisations
13. Update client data	13. PROC	13. Document collection	13. Resume & Signature
14. FE/DD			14. Portability

Source: Author’s elaboration

We can observe that the order of the macro blocks, both in the I&W and in the shop, presents several differences from the order in which the macro blocks are actually executed in the field. Note that some of the macro blocks referred to in the field were not even considered as such in the process description in KM. This means that, besides aligning the order in which the processes were described, it was also necessary to add some steps. To give a better context, Table 2 explains in more detail what some macro block consists of.

Table 3 – Macro block’s definition

Macro Block	Explanation
<i>Client Data Validation</i>	Validate with the customer the data in the system (name, ID number, e-mail, telephone contact)
<i>Client Validation</i>	Validate that the customer is who they say they are (via VAT number)
<i>Technology</i>	Confirm the technology available at the address indicated
<i>Validate Fraud</i>	Validate that the voice is that of an adult
<i>Scoring</i>	Process of validating customer debts
<i>PROC</i>	Termination process with the competing operator
<i>Portability</i>	Phone number portability (keep the same number)
<i>FE/DD</i>	Change to e-invoicing and direct debit
<i>Explicit Confirmation</i>	Text message sent to the customer during the call with all the details of the new contract. Customer must reply "YES" to the SMS
<i>Authorisations</i>	Set of 3 questions asked to the customer about the use of his personal data

Source: Author’s elaboration

Two of these macro blocks are crucial for the registration of the sale and may eventually prevent the process from moving forward. One of these macro blocks is the *Client Data Validation*. This is the moment when the merchant ensures that the person is who they

say they are by confirming their personal data, if it is already in the system. If the customer cannot confirm their details correctly, the adherence process will not be able to proceed.

The other macro block is *Scoring*. The *Scoring* is a process that takes place automatically in the system and, in the event of debts, prevents the process from continuing. The customer is then forwarded to a specialist line if so desired.

4.1.3. Front Ends

One of the major objectives of the project was to standardise processes between channels. To do this, as previously discussed, it was necessary to gather, in KM and in the field, the current process and understand how it could be redesigned. However, process standardisation also involved standardising the front ends used. The front end is the computer system where the channel performs the entire purchase process and makes the registration of the sale. At the company, not all the commercial channels use the same front end. Moderno and Revenda use +Vendas, while the Stores, I&W and Outbound use the UNI and VD use the VD App.

The canals that use UNI, shops, I&W and Outbound, also have access to some functionalities of +Vendas and, therefore, in many cases, during customer service, they can jump between UNI and +Vendas, although the registration must be done in UNI. It should be noted that all the steps of the sales process can be done in UNI, and the only reason that leads salespeople to use +Vendas is personal preference or wrong training.

4.1.4. Experimental procedure

4.1.4.1. Average attendance times

In Table 3, we can see the average service time broken down by each macro block. These collected times reflect the original process, before any changes were made. The aim was to have a basis of comparison for what the future process will be and the estimated time savings.

We can see that in some of the macro blocks there is a large discrepancy in the execution time of the block, but also that in some of them the times are relatively similar.

Note that the average total time also includes the time of discussion with the client, that is, it corresponds to the total time of iteration with the client.

Table 4 – Average attendance times

Macro Blocks	I&W	Stores
Client Data Validation	23sec	10sec
Consult Address and Technology	2:19min	1:53sec
Scoring	17seg	-
Consult Offer	2:11seg	2:21min
Sell SIM Card	-	1:30min
Portability	4:12min	6:05min
PROC	6:38min	1:54min
Document Collection	-	47sec
Data Validate and Update	39sec	1:35min
Schedule	1:01min	1:50min
FE/DD	1:23min	1:10min
Authorisations	40sec	37sec
Resume & Signature	1:24min	1:57min
Explicit Confirmation	1:41min	-
Average total attendance time	25:31min	28:29min

Source: Author's elaboration

First of all, it should be explained that the average total attendance time incorporates not only the process times but also the times for discussion and clarification of doubts with the customer.

It is important to justify the greater discrepancies between channels, namely in the *PROC*, and *Resume & Signature* blocks. The timing of *PROC* is different because the process differs from shop to I&W. In the shop, *PROC* is fully digital, i.e. the system automatically fills in the cancellation form with the customer's details that have already been provided. After this filling in, the document is digitally signed by the client or if the client prefers, the document can be printed to sign it. At I&W this does not happen because there can be no signature from the client, the nature of the channel (remote) does not allow it. What happens is that the salesperson manually fills in the termination document and then sends it to the customer. The client must sign and send it back to the company to initiate the termination process with the competing operator.

Resume & Signature is a different process in these two channels. In the I&W there can be no signature on the part of the client, this being replaced by explicit confirmation. When there is no signature, it is natural that the average time is less than the one accounted in shop.

As previously mentioned, Scoring is a process that occurs automatically in the systems used by the channels and therefore, in general, it is not possible to measure the time of this process. However, at the I&W, sometimes a tool is still used to test whether or not the customer has debts that make it impossible to register the sale. The operators, with their experience, can sometimes realize that the customer has debts and therefore prefer to use this tool at an early stage, so as not to lose unnecessary time, time that can be used to attract a new customer.

4.1.5. Process redesign

Figure 3 – Redesign of the block’s order in the stores and I&W



Source: Author’s elaboration

This was the first phase of redesigning future processes. After studying the current processes (As Is), dividing the process into macro blocks and field visits, we initiated a change in the order of the macro blocks in the sales process. The goal, with this reordering, was to anticipate all the macro blocks that could make it impossible to register the sale. Thus, by passing these macro blocks, it is certain that the sale will be able to take place and all the following processes will not be done as a waste of time.

In addition, we wanted to change the processes so that, besides reducing the attendance time, we could improve the customer experience. For this, the field visits were also important to identify situations in which the customer felt uncomfortable with the process.

4.1.5.1. Client Data Validation

Something we realised during field visits is that many new clients don't like to be asked for their tax number at an early stage.

At I&W, when we receive a call, in the vast majority of cases, the client is already contextualised. When, on the site, we ask to contact the sales line, if the number, at any time, is associated to NOS, the salesman will answer the call knowing already with whom he is talking and at that moment, he only has to ask the customer to confirm his VAT number just to ensure that the person is really the one registered in the system. In the case of new customers this does not happen since the company does not have any data of individuals who have never had any service with the company. In these situations, the process would require the salesman to ask for the fiscal number in order to create a person on the system, and also to confirm the veracity and validity of that fiscal number on an official site of the Portuguese Government that serves for this purpose. What we realised was that these new clients don't like to be asked for their fiscal number because they consider it a very personal data and because many times, they just wanted to know a little better the offer available at that moment.

So what we did was to change the data to be asked from the customer. Instead of the fiscal number, we decided to start asking for the telephone number. This way, we were able to understand if the client in front of us has ever had a contracted service with the company

and, therefore, would already have his data registered in the system, without the client feeling uncomfortable when revealing such sensitive data.

4.1.5.2. Scoring

As mentioned before, the scoring process may make it impossible to register the sale if the customer has past debts. Taking this into account, it made sense to anticipate, as much as possible, this block within the process. In this way, if the customer was unable to contract a new residential package due to the existence of debts, this would be quickly addressed and the salesman would be available for a new customer. In addition, the customer himself would know earlier that the process could not go ahead. This small change had a big impact in terms of time, since this step always happened after the address consultation, which on average takes about 2 minutes, but which in some cases can take a long time since it is not always easy to identify the customer's address.

With the field visits, it was possible to see that this change will have more impact on I&W as we observed a percentage of clients in litigation of 15.25% against 1.45% in the stores.

4.1.5.3. Consult address

Figure 4 – Description of all the possible usecases of address not ok

AS IS

Use cases of address Not OK	PRESENIAL	REMOTE
	Stores	I&W
Address not found	<ul style="list-style-type: none"> Consult how to search for an address Request address creation 	<ul style="list-style-type: none"> Consult how to search for an address Request address creation
Active address (same customer wants a new contract)	<ul style="list-style-type: none"> Manual Contract Forward Activation Line Line creates PA and registers the sale in system 	<ul style="list-style-type: none"> Forward Activation Line Line creates PA Contacts customer and registers sale in system
Active address (other customer)	<ul style="list-style-type: none"> Request proof of address Register sale with upload Automatically created subject Upload in Wise if delivery of doc. later 	<ul style="list-style-type: none"> Request proof of address Request customer to send via email or FAX Contact customer and register sale in system
Active address with 6 channels (same customer or other customer)	Register sale	Register sale
Address blocked for fraud	<ul style="list-style-type: none"> Request proof of address Create manual contract Create fraud subject 	<ul style="list-style-type: none"> Request proof of address Request to customer to send via email or FAX Opens fraud case Contacts customer and logs sale in system if unblocked
Address with debt	<ul style="list-style-type: none"> Request proof of address Creates subject in Wise 	<ul style="list-style-type: none"> Request proof of address Creates subject in Wise
Address CP7 risk	Register sale	Forwards to shop
Address disconnected for less than 30 days	<ul style="list-style-type: none"> Registers the sale After alert via Sales Validation, requests proof of address from customer 	<ul style="list-style-type: none"> Registers the sale After alert via Sales Validation, requests proof of address from customer

Source: Author's elaboration

As shown in figure 3, there are several problematic use cases in the address query that can hinder and delay the sales process and, in many cases, prevent sales from taking place. The use cases which make it impossible to register the sale are highlighted in darker colour. Something that we have also identified is the high number of different resolutions of use cases. These different resolutions cause doubts in sales people who need more time and, in many cases, to ask for help or consult the process in KM to know how to follow the process.

The objectives of the redesign in the address queries were to reduce the number of usecases, to standardize, within possibilities, the resolutions of the cases in which the address "Not Ok" and to allow, in more situations, that the registration of the sale could continue at that moment.

Figure 5 – Use cases of address not ok in the future

Use cases Of address Not OK	TO BE	
	Lojas	I&W
Address not found	<ul style="list-style-type: none"> Consult how to search for an address Request address creation 	<ul style="list-style-type: none"> Consult how to search for an address Request address creation
Active address - same customer wants new contract	<ul style="list-style-type: none"> Call Activations Line and request PA creation Register sale 	<ul style="list-style-type: none"> Call Activations Line and request PA creation Callback to customer Register sale
Active address - other customer	<ul style="list-style-type: none"> Register sale Pending to upload a document proving the address 	<ul style="list-style-type: none"> Register sale Pending to upload a document proving the address
Active address with 6 channels (same customer or other customer)	Register sale	Register sale
Address blocked for fraud	<ul style="list-style-type: none"> Register sale Pending upload of address document proof forwarded to fraud 	<ul style="list-style-type: none"> Register sale Pending upload of address document proof forwarded to fraud
Address with debt	n.a	n.a
Address CP7 risk	Register sale	Forwards to shop
Address disconnected for less than 30 days	n.a	n.a.

Source: Author’s elaboration

As we can see, with this change, we realised that in the Not OK address cases, we now have only three resolution paths and all of them will allow the registration of the sale at that moment. As has already been said, having only three paths of resolution, it will be easier for the commercials to know how to resolve any of the use cases besides allowing the customer to finalize their membership at that moment, thus running less risk of losing the customer. We also decided to drop some use cases that happened a very small number of times and had no impact on the company's business, these are Address with debt and Address disconnected for less than 30 days.

4.1.5.4. Portability

As we can see in table 3, the portability done at the I&W takes, on average, roughly 2 minutes less than the portability done in shop. This is because at the I&W, portability can

be done during the purchase process, i.e., the sales person only has to follow the process in the system and the portability form will be filled in and sent to the client automatically. In shop, although the same front-end is used, this does not happen. In cases where portability is made, it is left to the last step, being made after the registration of the sale of the residential package. This requires more clicks to get to the portability process and, in addition, filling out the portability form takes longer when it is not automatic as in the I&W.

What we have done is to pull the in-store portability to the same moment as the I&W and allow the process to be done in the same way. In this way, we hope that the difference in average in-store time when compared to I&W in performing this step will eventually be minimised, thus speed up the in-store process.

4.2. Questionnaire

The telecommunications market in Portugal reveals a deep integration of TV, internet and voice services in the homes of those surveyed, with a remarkable 98.1% of participants (104 in total) indicating that they have a complete package of these services in their homes. This demonstrates a strong adoption of and dependence on these technologies for entertainment, communication and connectivity purposes.

Table 5 – Pearson’s (1) and Spearman’s (2) correlation coefficients

	I would recommend my operator to friends and family	I feel a connection to my operator	I liked the sign-up process with my operator	I intend to stay with my operator in the future	Would you be willing to slightly increase the price of the service if it reduced your loyalty period to 6 months?
I'm satisfied with my operator's service	(1) $\hat{\rho}$ = 0.842 (2) $\hat{\rho}$ = 0.835	(1) $\hat{\rho}$ = 0.721 (2) $\hat{\rho}$ = 0.705	(1) $\hat{\rho}$ = 0.788 (2) $\hat{\rho}$ = 0.778	(1) $\hat{\rho}$ = 0.768 (2) $\hat{\rho}$ = 0.747	-
Do you think the loyalty period brings you any benefits?	-	-	-	-	(1) $\hat{\rho}$ = 0.252 (2) $\hat{\rho}$ = 0.252

Source: Author’s elaboration

Users' satisfaction with their operators is a highlight in this scenario. Only a small proportion, representing 2.4%, of those who said they were satisfied with the services provided by their operator, revealed that they would not recommend that same operator to family and friends. Using Pearson's Linear Correlation method, we were also able to identify a strong positive linear correlation (Callegari-Jacques, 2003) between the level of satisfaction and the possibility of recommending the service to family and friends ($\hat{\rho}_1=0.842/\hat{\rho}_2=0.835$). This suggests that customer satisfaction helps not only to keep customers for longer (knowing that long-term customers are more profitable than new ones) but also to reach new customers, which is in line with Reinartz and Kumar (2000), as we saw above. This strong positive linear correlation also extends to the relationship between customer satisfaction and the feeling of connection between the customer and the brand ($\hat{\rho}_1=0.721/\hat{\rho}_2=0.705$).

An important question that we tried to understand with this questionnaire was whether there was any relationship between the level of overall customer satisfaction and the level of customer satisfaction with the quality of service at the initial moment of signing up. This was one of the main doubts, as it relates directly to the work carried out during the internship and the possible alteration of the loyalty period in the future. With the results obtained, we were able to show that there is a strong positive correlation between these two variables ($\hat{\rho}_1=0.788/\hat{\rho}_2=0.778$). This result corroborates what Andreassen (2000) tells us, who emphasises the customer's first contact with the brand and the evolution of satisfaction levels from that moment on.

It should be noted that a substantial proportion of respondents, 93% to be precise, who feel satisfied with their service, do not intend to change operator at the moment or at the end of their contract. This highlights not only current satisfaction, but also confidence in the continuity of these services. It was possible to demonstrate a strong positive linear correlation between the level of satisfaction and the customer's willingness to stay with the operator ($\hat{\rho}_1=0.768/\hat{\rho}_2=0.747$). These results are in line with what Tena-Monferrer et al. (2022) say when they say that a high level of satisfaction can tend to lead to a repurchase intention. This point is particularly important since, according to O'Brien and Jones (1995), old customers are more profitable than new ones.

The choice of operator seems to be a decision that balances several factors. While 70% of participants mentioned that the quality of service played a significant role in their decision, 83% considered price to be a major factor in selecting an operator. This reflects a

search for a balance between quality of service and affordability, and in this market, price continues to be the main deciding factor for the majority of individuals looking for this service.

The respondents' technological preferences also came to the fore. An impressive 91.3% expressed a desire to carry out the entire subscription process online, indicating a growing preference for convenience and practicality when interacting with operators. Since the percentage of people who "Agree" or "Totally Agree" with this statement was so high, we decided to see how this percentage could vary by extending the questionnaire to the whole population (young adults - under 30 - with TV + Net + Voice service). By extending the questionnaire, this proportion would vary between 85.95% and 96.75% with 95% confidence. In addition, we realised that there is a moderate positive linear correlation between those who would like to be able to do the whole membership process online and those who find the traditional/current membership process too slow and complex. 79.6% consider the waiting time in shop to be high, which suggests a need to optimise face-to-face service. These results indicate that there may be an incentive for the company to bet, as planned, on developing the membership process entirely online, without the need to contact any of the company's sales channels. If these results weren't so expressive, perhaps the company should rethink its strategy and apply the resources to another end.

In order to get a better understanding of customer perceptions of the length of the loyalty period and its possible reduction/extinction in the future, we concluded that only 30.5% think that there is a benefit for them in having a 2-year loyalty period, but that 70.5% would not be willing to slightly increase their monthly amount in return for a reduction/extinction of the loyalty period. The results indicated that there is a weak positive linear correlation between those who consider that the loyalty period does not bring any benefit and those who are willing to pay slightly more each month to see the period reduced or cancelled ($\hat{\rho}_1=0.252/\hat{\rho}_2=0.252$). All the correlations mentioned above are statistically significant at the 5% level.

We can see that the results of this survey are in line with the ideals defended by the authors we visited, thus corroborating the literature review. To summarise, the telecommunications market in Portugal shows a high level of integration of services in users' homes, as well as remarkable levels of satisfaction and loyalty, despite the areas identified for

improvement. The balance between quality of service and price, the demand for digital convenience and the search for simpler processes stand out as crucial aspects for operators in Portugal's competitive telecoms landscape.

5. Final Conclusions

5.1. General Conclusions

The goal of this project was to simplify, streamline and improve the processes of subscription and modification of residential packages in one of the telecommunications companies in the Portuguese market. With this, we wanted to achieve a major objective: improve the customer experience when contacting the company, making the process faster and responding to their difficulties.

The field visits made it possible to understand the customers' main pains at the moment of enrolment. In addition, and no less important, timing and observation of the entire process in the field allowed us to identify parts of the process that had great potential for time reduction, the differences between the process in the field and the description of the same process in the company's internal platform (KM), as well as other difficulties that the salespeople encountered when attending.

We managed to take some steps in the right direction. With the process redesign, we clearly managed to simplify some of the macro blocks, reducing the possible procedural outputs and allowing, in more situations, the registration of the sale. We were also able to guarantee that all the usecases that would make it impossible to register the sale were at an early stage of the process, thus guaranteeing that the salesperson would be available more quickly for the next customer and improving the customer experience, as no unnecessary time was lost. Regarding the average time, we believe that the changes made will also have an impact at this level, namely in the address search blocks, portability and with the obligation to contextualise the customer before moving forward with the process.

We believe that these changes will improve the customer experience, by reducing the average waiting time, customer service and the service itself, and build a positive brand image. With this, the company believes it will have one more tool to keep and attract customers.

Regarding the questionnaire, it was possible to realise that the quality of service has a significant impact on the customer's perception of the service. This result, combined with the literature studied, gives strength to the project that was started during the internship period. In fact, being able to simplify the sign-up process, thereby increasing the attention

given to the customer that the sales assistant is currently attending to and reducing the time needed to complete the process are important steps in the right direction. With these changes, the company will be able to increase customer satisfaction and thus increase retention rates. As has already been mentioned here several times, this will play an even more important role in the future when the loyalty period is expected to decrease/end. It should be noted that, in the future, it would be interesting to extend the questionnaire to a larger number of people and to all age groups in order to obtain different points of view and stronger results.

From the questionnaire, we can also see that there is demand for the possibility of signing up completely online without the need to contact someone from the operator directly. This reinforces the initiative taken by the company to implement this service along with simplifying the process in traditional sales channels.

5.2. Limitations

The main limitation of this project is the impossibility, at this point, to understand if the work done has added value or not. Implementing all these changes takes a long time. It involves the complete redesign of the whole process, understanding exactly what the new system will allow in the future, editing and publishing the processes in KM and also additional training to all the channels.

During the 6 months of internship, it was not possible for us to go through all these phases. It is a project still underway in the company, so it would only be possible to evaluate the results approximately one year from now. However, the expectation is that these changes, when fully implemented, will have a very positive impact on the experience that the customer will have every time he interacts with the company.

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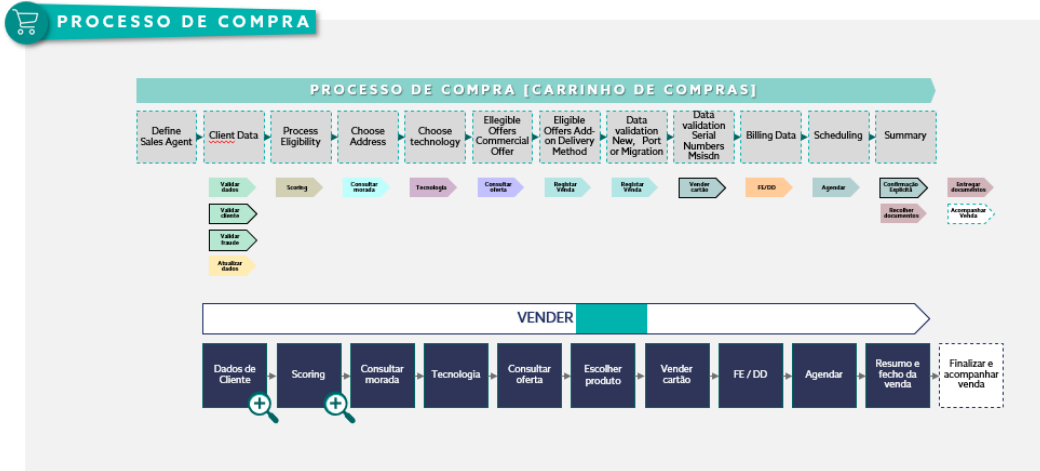
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Annexes

Annex 1: Process redesign

O processo de [redacted] terá a mesma sequencia de passos para todos os canais comerciais incluindo o canal digital



Annex 2: Store's times

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	N*	NIF	Morada + Tecnologia	Vender Cartão	Criar Pessoa	PROC	Fotografar C.C e fazer upload	DD/FE	Agendar instalação	Autorizações	Resumo + Assinatura digital	Tempo total atendimento	Sucesso	Motivos
1	1	11	0									404	Não	SI Interesse na oferta
2	2	10	54									1589	Não	UNI
3	3		89						45		107	1126	Sim	
4	4	12	0	35			40		56		35	955	Sim	
5	5		155				48		81	42	77	859	Sim	
6	6	8	0	45		194	77				174	3573	Sim	
7	7	20	0									790	Não	Cliente não podia decidir
8	8	12	124		189			164	40		75	1161	Sim	
9	9	8	0									535	Não	SI Interesse na oferta
10	10	12	109				55		30		21	1001	Sim	
11	11	6	0				29				63	2100	Sim	
12	12	6	342		162		45		57	36	127	1865	Sim	
13	13	9	71									414	Não	SI Interesse na oferta
14	14	8	0									314	Não	SI Interesse na oferta
15	15		35									637	Não	SI Interesse na oferta
16	16	14	111				72	67	45	34	122	1815	Sim	
17	17		113	28			35	98	26	15	56	2270	Sim	
18	18		81									536	Não	SI Interesse na oferta
19	19	9	0									505	Não	SI Interesse na oferta
20	20		42				77		80	32	45	716	Sim	
21	21	6	0									780	Sim	
22														

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	N*	NIF	Morada + Tecnologia	Vender Cartão	Criar Pessoa	PROC	Fotografar C.C e fazer upload	DD/FE	Agendar instalação	Autorizações	Resumo + Assinatura digital	Tempo total atendimento	Sucesso	Motivos
23	22	25	0									615	Não	St Interesse na oferta
24	23		527									650	Não	St Interesse na oferta
25	24	12	0									151	Não	St Interesse na oferta
26	25	14	71	148	141	35	35		92	66		2339	Sim	
27	26	11	0									719	Não	St Interesse na oferta
28	27	8	0	61			29				54	923	Sim	
29	28	11	63									305	Não	Estava fidelizado
30	29		141									488	Não	Estava fidelizado
31	30	8	49									405	Não	St Interesse na oferta
32	31	7	0									187	Não	St Interesse na oferta
33	32	7	0				46				51	357	Sim	
34	33	10	92									540	Não	DTH
35	34	8	0				100			7	70	482	Sim	
36	35	6	0	45			25				34	500	Sim	
37	36		77									347	Não	St Interesse na oferta
38	37	7	78									490	Não	Vai pensar
39	38	6	53				28		34		131	1590	Sim	
40	39	6	0						131			552	Sim	
41	40	9	0						65		40	775	Sim	
42	41		0								30	555	Sim	
43	42		48				25		140	26	50	1130	Sim	
44	43		95	108								896	Não	
45	44	15	0				37				60	383	Sim	
46	45		39		130		32		107	56	54	999	Sim	
47	46		132		148							762	Não	Contencioso
48	47	8	0								106	1209	Sim	
49	48	7	105									1765	Sim	
50	49		0								80		Sim	
51	50		50	40	128	114	67		102	64	140	1536	Sim	
52	51	10	189									471	Não	Sem interesse na oferta
53	52		45				35		72	52		534	Sim	
54	53		0				61				104		Sim	
55	54		0						42		67	578	Sim	
56	55	10	419	350			57		60	39		3193	Sim	
57	56		102									778	Não	Sem interesse na oferta

58	57		166								606	Não	Sem interesse na oferta	
59	58		56								731	Não	Sem interesse na oferta	
60	59		172	39	145		37			22	64	1101	Sim	
61	60		66									1440	Não	
62	61		0					102	26		118	572	Sim	
63	62	12	0										Não	Sem interesse na oferta
64	63	14										533	Não	Sem interesse na oferta
65	64	17										534	Não	Sem interesse na oferta
66	65	9										683	Não	Sem interesse na oferta
67	66	22		99		39	27	25	48	12	34	998	Sim	
68	67	9										804	Não	Sem interesse na oferta
69	68				83	42	21		95	10	40		Sim	
70	69	7										486	Não	Sem interesse na oferta
71														
72														
73		Média	Média	Média	Média	Média	Média	Média	Média	Média	Média	Média		
74		9.945345346	112.8857143	89.9	149	114.333333	47.47826087	109.666667	70.35	36.92857143	76.96428571	941.5423729		

Annex 3: I&W's times

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Nº	NIF	Morada + Tecnologia	Validar dados(Recenseamento)	Criar Pessoa	DD/FE	PROC	Agendar instalação	Autorizações	Resumo	Conf. Explícita	Tempo total chamada	Sucesso	Motivos
2	1		55									643	Não	S\ interesse na oferta disponível
3	2	23	227									496	Não	Não tinha tecnologia pretendida
4	3		25									209	Não	S\ interesse na oferta disponível
5	4		41									1192	Não	S\ interesse na oferta disponível
6	5	67	42									590	Não	Contencioso
7	6	29	20									532	Não	S\ interesse na oferta disponível
8	7	65	676									1384	Não	
9	8	20	57		79							305	Não	
10	9	26	383									766	Não	Não tinha tecnologia pretendida
11	10		97									890	Não	Não tinha tecnologia pretendida
12	11		101									715	Não	S\ interesse na oferta disponível
13	12		46									512	Não	S\ interesse na oferta disponível
14	13		0	82	53	54		162	80	139	46	655	Sim	
15	14		160									480	Não	Não tinha tecnologia pretendida
16	15		73								230	701	Não	S\ interesse na oferta disponível
17	16		36		139			103	108	97		1487	Sim	
18	17		45									597	Não	S\ interesse na oferta disponível
19	18		42									406	Não	S\ interesse na oferta disponível
20	19		23		143			48	36	80	82	1180	Sim	
21	20		75									362	Não	S\ interesse na oferta disponível

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Nº	NIF	Morada + Tecnologia	Validar dados(Recenseamento)	Criar Pessoa	DD/FE	PROC	Agendar instalação	Autorizações	Resumo	Conf. Explícita	Tempo total chamada	Sucesso	Motivos
22	21		64									447	Não	S\ interesse na oferta disponível
23	22	43	45		73	169		22	39	97	131	790	Sim	
24	23	20	58									507	Não	S\ interesse na oferta disponível
25	24		152									954	Não	S\ interesse na oferta disponível
26	25		52		155	81		53		35	40	747	Sim	
27	26	10	25									65	Não	Contencioso
28	27		48									2103	Não	S\ interesse na oferta disponível
29	28	26	0									645	Não	S\ interesse na oferta disponível
30	29	9	93		26							445	Não	S\ interesse na oferta disponível
31	30	17	78									444	Não	S\ interesse na oferta disponível
32	31	15	444									344	Não	Contencioso
33	32	7	153			171	370	60	21	71	116	2520	Sim	
34	33	9	0									195	Não	Contencioso

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Nº	NIF	Morada + Tecnologia	Validar dados(Recenseamento)	Criar Pessoa	DD/FE	PROC	Agendar instalação	Autorizações	Resumo	Conf. Explícita	Tempo total chamada	Sucesso	Motivos
35	34	4	87					19		71	74	999	Sim	
36	35	42	167		91							1321	Não	S\ interesse na oferta disponível
37	36	11	22									225		Contencioso
38	37		17									189	Não	S\ interesse na oferta disponível
39	38	10	49		39	58		66	28	45	70	1500	Sim	
40	39	30	159		51							1364	Não	Morada de risco e ativa
41	40	17	0									138	Não	Contencioso
42	41	14	437		61							708	Não	S\ Interesse na oferta
43	42	13	101									534	Não	S\ interesse na oferta
44	43	15	232			34		16	18	41	143	1065	Sim	
45	44	35	74		94							620	Não	S\ interesse na oferta
46	45		59									577	Não	S\ Interesse na oferta
47	46		66						23	138		1709	Não	
48	47		0									440	Não	S\ Interesse na oferta
49	48		382									620	Não	Contencioso
50	49	26	113					62	38	120	76	1830	Sim	
51	50	18	22									667	Não	S\ Interesse na oferta
52	51	6	278									780	Não	S\ Interesse na oferta
53	52	11	176									320	Não	Contencioso
54	53	10	159									762	Não	S\ interesse na oferta
55	54	19	131									875	Não	S\ interesse na oferta
56	55	19	424									1248	Não	S\ interesse na oferta
57	56	10	0		66	16	426		10	70		766	Sim	
58	57	82	114									300	Não	Contencioso
59	58	36	463									877	Não	S\ interesse na oferta
60	59	18	181									265		
61		Média tempo		Média tempo	Média tempo	Média tempo	Média tempo	Média tempo	Média tempo	Média tempo	Média tempo	Média tempo		Nº de contenciosos
62		23.11111111		82	82.30769231	83.2857143	398	61.1	40.1	83.666667	100.8	762.8305085	11	9
63														15.25%

Annex 4 – Days spent in the different channels

Dia	Participantes	Temas
7-Feb	Reunião	Dar a conhecer o projeto e organizar as idas ao terreno (Inbound)
8-Feb	Ida ao terreno - Inbound	
9-Feb	Ida ao terreno - Inbound	
10-Feb	Ida ao terreno - Inbound	
13-Feb	Ida ao terreno - Inbound	
20-Feb	Ida ao terreno - Inbound	
22-Feb	Ida ao terreno - Inbound	
23-Feb	Ida ao terreno - Inbound	
24-Feb	Reunião	Dar a conhecer o projeto e organizar as idas ao terreno (Lojas NOS)
24-Feb	Ida ao terreno - Inbound	
27-Feb	Ida ao terreno - Loja: Norteshopping	
28-Feb	Ida ao terreno - Loja: Norteshopping	
1-Mar	Ida ao terreno - Loja - Gaia shopping	
2-Mar	Ida ao terreno - Loja - Gaia shopping	
3-Mar	Ida ao terreno - Loja - Gaia Avenida da República	
6-Mar	Ida ao terreno - Loja - Marshopping	
7-Mar	Marshopping	
8-Mar	Ida ao terreno - Loja - Parque Nascente	
9-Mar	Ida ao terreno - Loja - Parque Nascente	
10-Mar	Ida ao terreno - Loja - Parque Nascente	
13-Mar	Ida ao terreno - Loja - Via Catarina	
14-Mar	Ida ao terreno - Loja - Via Catarina	
15-Mar	Ida ao terreno - Loja - Norteshopping	
16-Mar	Ida ao terreno - Loja - Norteshopping	
21-Mar	Reunião	Dar a conhecer o projeto e organizar as idas ao terreno (outbound)
21-Mar	Ida ao terreno - Loja: Parque Nascente	
22-Mar	Ida ao terreno - Outbound	
23-Mar	Ida ao terreno - Outbound	
24-Mar	Ida ao terreno - Outbound	
27-Mar	Ida ao terreno - Outbound	
28-Mar	Ida ao terreno - Outbound	
29-Mar	Ida ao terreno - Outbound	
30-Mar	Ida ao terreno - Outbound	
31-Mar	Ida ao terreno - Outbound	
6-Apr	Ida ao terreno - Outbound	
11-Apr	Ida ao terreno: Inbound e loja: norteshopping	

Annex 5 – Survey

1. Do you have a TV + Net + Voice service at home?
 - a. Yes
 - b. No
 - c. Don't know

2. Please rate your level of agreement with the following statements as:
Strongly Agree / Agree / Disagree / Strongly Disagree / Don't Know:
 - a. I'm satisfied with my operator's service
 - b. I would recommend my operator to friends and family
 - c. I feel a connection to my operator
 - d. I liked the sign-up process with my operator
 - e. What made me choose my operator was the price
 - f. What made me choose my operator was the quality of service
 - g. I intend to stay with my operator in the future
 - h. I switch operators regularly
 - i. I'd like to be able to do the whole membership process digitally without having to go to the shop or call the line
 - j. I find the process of signing up through traditional channels (shop/telemarketing) very complex and time-consuming
 - k. Waiting times at telecoms shops are high

Annex 6– Survey’s results

Frequencies

		Notes
Output Created		09-SEP-2023 19:38:25
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14 P15 /PIECHART FREQ /ORDER=ANALYSIS.
Resources	Processor Time	00:00:01.61
	Elapsed Time	00:00:01.10

[DataSet2]

		Statistics						
		P1	P2	P3	P4	P5	P6	P7
N	Valid	103	104	103	103	96	101	101
	Missing	1	0	1	1	8	3	3

		Statistics						
		P8	P9	P10	P11	P12	P13	P14
N	Valid	97	101	104	100	97	100	95
	Missing	7	3	0	4	7	4	9

Statistics

P15

N	Valid	88
	Missing	16

Frequency Table

P1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	1.9	1.9	1.9
	1	101	97.1	98.1	100.0
	Total	103	99.0	100.0	
Missing	System	1	1.0		
Total		104	100.0		

P2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	2.9	2.9	2.9
	2	19	18.3	18.3	21.2
	3	58	55.8	55.8	76.9
	4	24	23.1	23.1	100.0
	Total	104	100.0	100.0	

P3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	9.6	9.7	9.7
	2	13	12.5	12.6	22.3
	3	55	52.9	53.4	75.7
	4	25	24.0	24.3	100.0
	Total	103	99.0	100.0	
Missing	System	1	1.0		
Total		104	100.0		

P4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	17.3	17.5	17.5

	2	26	25.0	25.2	42.7
	3	47	45.2	45.6	88.3
	4	12	11.5	11.7	100.0
	Total	103	99.0	100.0	
Missing System		1	1.0		
Total		104	100.0		

P5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	5.8	6.3	6.3
	2	17	16.3	17.7	24.0
	3	52	50.0	54.2	78.1
	4	21	20.2	21.9	100.0
	Total	96	92.3	100.0	
Missing System		8	7.7		
Total		104	100.0		

P6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.0	1.0	1.0
	2	14	13.5	13.9	14.9
	3	55	52.9	54.5	69.3
	4	31	29.8	30.7	100.0
	Total	101	97.1	100.0	
Missing System		3	2.9		
Total		104	100.0		

P7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	5.8	5.9	5.9
	2	22	21.2	21.8	27.7
	3	53	51.0	52.5	80.2
	4	20	19.2	19.8	100.0
	Total	101	97.1	100.0	
Missing System		3	2.9		
Total		104	100.0		

P8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	11.5	12.4	12.4

	2	16	15.4	16.5	28.9
	3	47	45.2	48.5	77.3
	4	22	21.2	22.7	100.0
	Total	97	93.3	100.0	
Missing System		7	6.7		
Total		104	100.0		

P9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	19.2	19.8	19.8
	2	42	40.4	41.6	61.4
	3	32	30.8	31.7	93.1
	4	7	6.7	6.9	100.0
	Total	101	97.1	100.0	
Missing System		3	2.9		
Total		104	100.0		

P10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.9	1.9	1.9
	2	7	6.7	6.7	8.7
	3	50	48.1	48.1	56.7
	4	45	43.3	43.3	100.0
	Total	104	100.0	100.0	

P11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	4.8	5.0	5.0
	2	13	12.5	13.0	18.0
	3	53	51.0	53.0	71.0
	4	29	27.9	29.0	100.0
	Total	100	96.2	100.0	
Missing System		4	3.8		
Total		104	100.0		

P12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.0	1.0	1.0
	2	10	9.6	10.3	11.3
	3	55	52.9	56.7	68.0

	4	31	29.8	32.0	100.0
	Total	97	93.3	100.0	
Missing System		7	6.7		
Total		104	100.0		

P13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	30	28.8	30.0	30.0
	1	70	67.3	70.0	100.0
	Total	100	96.2	100.0	
Missing System		4	3.8		
Total		104	100.0		

P14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	66	63.5	69.5	69.5
	1	29	27.9	30.5	100.0
	Total	95	91.3	100.0	
Missing System		9	8.7		
Total		104	100.0		

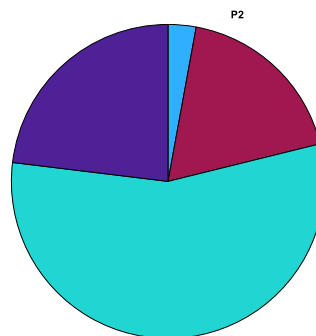
P15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	62	59.6	70.5	70.5
	1	26	25.0	29.5	100.0
	Total	88	84.6	100.0	
Missing System		16	15.4		
Total		104	100.0		

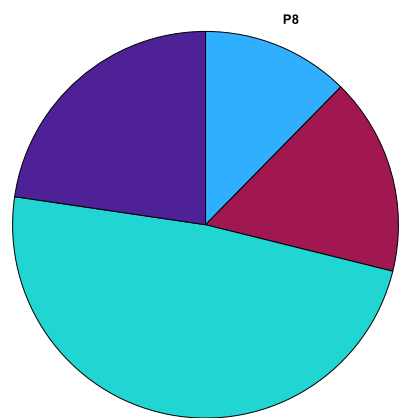
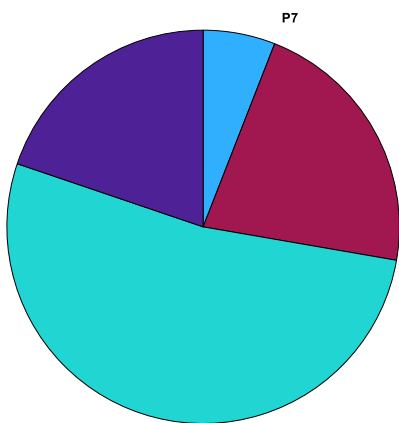
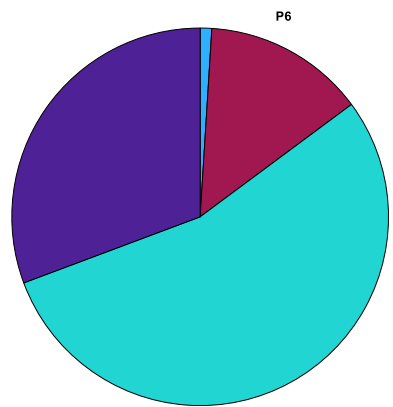
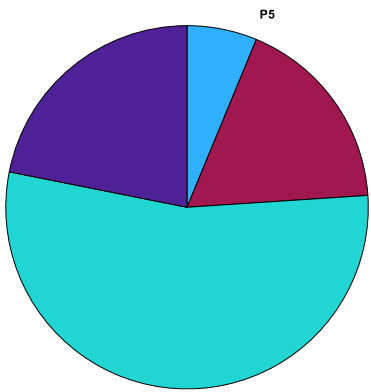
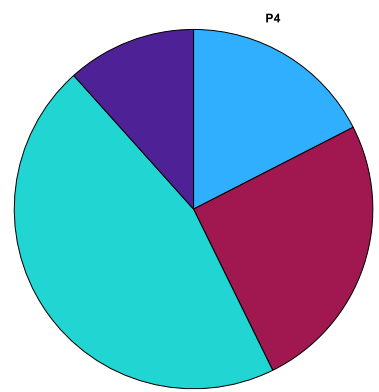
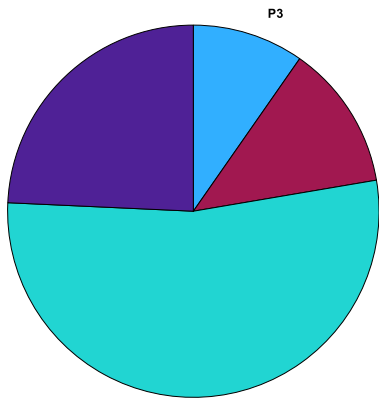
Pie Chart

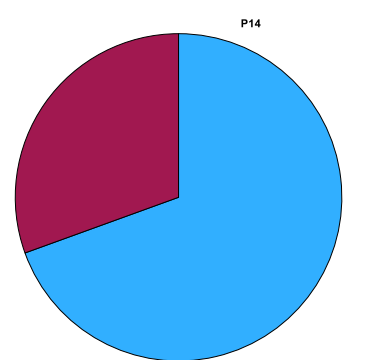
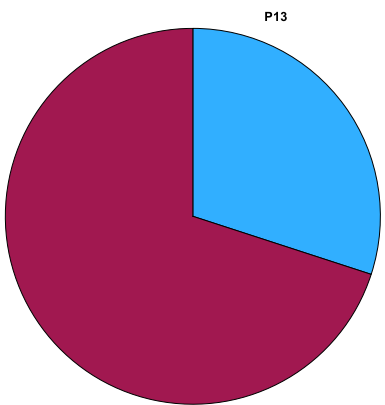
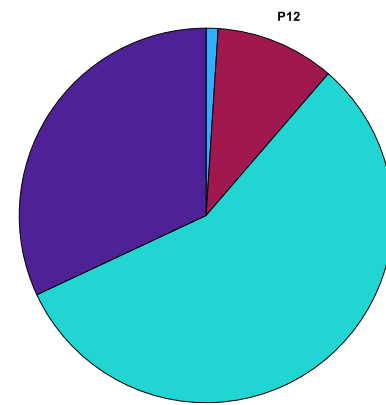
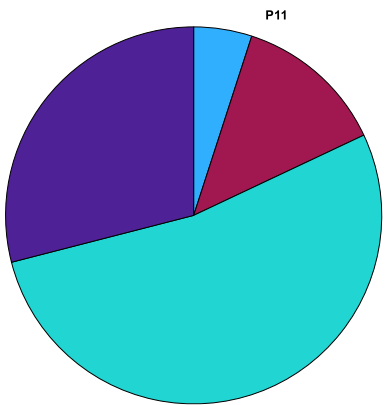
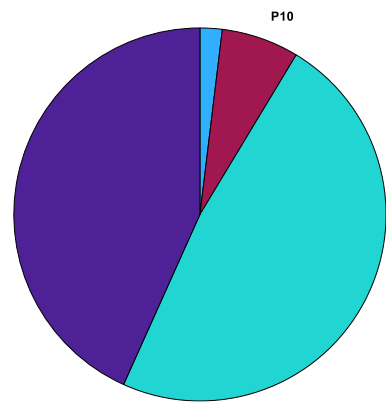
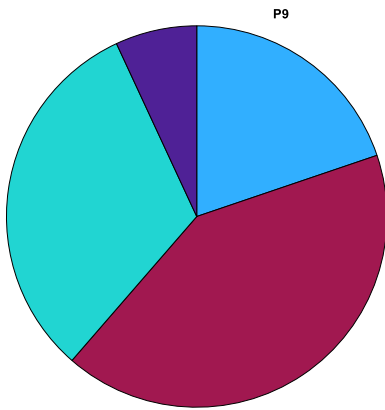


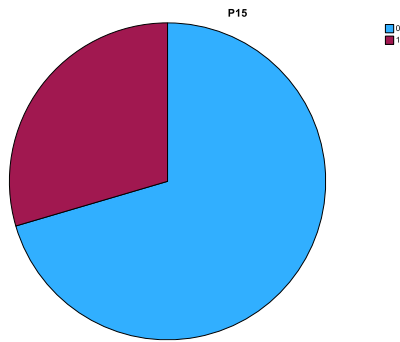
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1
2
3
4







Correlations

Notes

Output Created	09-SEP-2023 19:40:38	
Comments		
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax	CORRELATIONS /VARIABLES=P2 P3 P4 P5 P8 /PRINT=TWOTAIL NOSIG FULL /MISSING=PAIRWISE.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Correlations

		P2	P3	P4	P5	P8
P2	Pearson Correlation	1	.842**	.721**	.788**	.768**

	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	104	103	103	96	97
P3	Pearson Correlation	.842**	1	.777**	.779**	.798**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	103	103	102	96	97
P4	Pearson Correlation	.721**	.777**	1	.725**	.786**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	103	102	103	95	96
P5	Pearson Correlation	.788**	.779**	.725**	1	.856**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	96	96	95	96	92
P8	Pearson Correlation	.768**	.798**	.786**	.856**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	97	97	96	92	97

** . Correlation is significant at the 0.01 level (2-tailed).

Nonparametric Correlations

Notes

Output Created	09-SEP-2023 19:40:38	
Comments		
Input	Active Dataset	DataSet2
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	104
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax	NONPAR CORR /VARIABLES=P2 P3 P4 P5 P8	

		/PRINT=SPEARMAN TWO TAIL NOSIG FULL /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00
	Number of Cases Allowed	393216 cases ^a

a. Based on availability of workspace memory

Correlations

			P2	P3	P4	P5
Spearman's rho	P2	Correlation Coefficient	1.000	.835**	.705**	.778**
		Sig. (2-tailed)	.	<.001	<.001	<.001
		N	104	103	103	96
	P3	Correlation Coefficient	.835**	1.000	.758**	.743**
		Sig. (2-tailed)	<.001	.	<.001	<.001
		N	103	103	102	96
	P4	Correlation Coefficient	.705**	.758**	1.000	.712**
		Sig. (2-tailed)	<.001	<.001	.	<.001
		N	103	102	103	95
	P5	Correlation Coefficient	.778**	.743**	.712**	1.000
		Sig. (2-tailed)	<.001	<.001	<.001	.
		N	96	96	95	96
	P8	Correlation Coefficient	.747**	.768**	.774**	.836**
		Sig. (2-tailed)	<.001	<.001	<.001	<.001
		N	97	97	96	92

Correlations

			P8
Spearman's rho	P2	Correlation Coefficient	.747**
		Sig. (2-tailed)	<.001
		N	97
	P3	Correlation Coefficient	.768**
		Sig. (2-tailed)	<.001

	N	97
P4	Correlation Coefficient	.774**
	Sig. (2-tailed)	<.001
	N	96
P5	Correlation Coefficient	.836**
	Sig. (2-tailed)	<.001
	N	92
P8	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	97

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

Notes

Output Created	09-SEP-2023 19:41:53	
Comments		
Input	Active Dataset	DataSet2
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	104
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax	CORRELATIONS /VARIABLES=P9 P10 P11 /PRINT=TWOTAIL NOSIG FULL /MISSING=PAIRWISE.	

Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Correlations

		P9	P10	P11
P9	Pearson Correlation	1	.030	.403**
	Sig. (2-tailed)		.768	<.001
	N	101	101	97
P10	Pearson Correlation	.030	1	.502**
	Sig. (2-tailed)	.768		<.001
	N	101	104	100
P11	Pearson Correlation	.403**	.502**	1
	Sig. (2-tailed)	<.001	<.001	
	N	97	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Nonparametric Correlations

Notes

Output Created	09-SEP-2023 19:41:53	
Comments		
Input	Active Dataset	DataSet2
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	Weight	<none>
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	N of Rows in Working Data File	104
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax	NONPAR CORR /VARIABLES=P9 P10 P11 /PRINT=SPEARMAN	

		TWOTAIL NOSIG FULL /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00
	Number of Cases Allowed	524288 cases ^a

a. Based on availability of workspace memory

Correlations

			P9	P10	P11
Spearman's rho	P9	Correlation Coefficient	1.000	-.090	.318**
		Sig. (2-tailed)	.	.369	.001
		N	101	101	97
	P10	Correlation Coefficient	-.090	1.000	.502**
		Sig. (2-tailed)	.369	.	<.001
		N	101	104	100
	P11	Correlation Coefficient	.318**	.502**	1.000
		Sig. (2-tailed)	.001	<.001	.
		N	97	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

Notes

Output Created	09-SEP-2023 19:42:58	
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	104
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on

		all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES=P14 P15 /PRINT=TWOTAIL NOSIG FULL /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Correlations

		P14	P15
P14	Pearson Correlation	1	.252*
	Sig. (2-tailed)		.022
	N	95	83
P15	Pearson Correlation	.252*	1
	Sig. (2-tailed)	.022	
	N	83	88

*. Correlation is significant at the 0.05 level (2-tailed).

Nonparametric Correlations

Notes

Output Created		09-SEP-2023 19:42:58
Comments		
Input	Active Dataset	DataSet2
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	Weight	<none>
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	N of Rows in Working Data File	104
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		NONPAR CORR /VARIABLES=P14 P15

		/PRINT=SPEARMAN TWOTAIL NOSIG FULL /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00
	Number of Cases Allowed	629145 cases ^a

a. Based on availability of workspace memory

Correlations

			P14	P15
Spearman's rho	P14	Correlation Coefficient	1.000	.252*
		Sig. (2-tailed)	.	.022
		N	95	83
	P15	Correlation Coefficient	.252*	1.000
		Sig. (2-tailed)	.022	.
		N	83	88

*. Correlation is significant at the 0.05 level (2-tailed).