ISCTE ◯ Business School
University Institute of Lisbon

LAUNDNET: A TIME-SAVING MOBILE APP FOR SELF-SERVICE LAUNDRY USERS

Margarida Guedes de Campos Gonçalves Saragoça

Dissertation submitted as partial requirement for the conferral of

Master in International Management

Supervisor:

Prof. Elizabeth Reis, Profª Catedrática, ISCTE Business School,

Departamento de Métodos Quantitativos para a Gestão e Economia

October 2017

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Abstract

The present dissertation addresses the self-service laundry (SSL) business in Portugal, particularly in Lisbon, and contextualizes it through a diachronic analysis. The theme urged mainly from my personal experience in this type of stores and in the perception of a waste of time problem associated to the use of the service. Hence, this research focuses in the analysis of the viability and potential of a mobile app which, by enabling the pre-booking of laundry machines, aims to bridge the eventual waste of time issue. The legitimacy of the analysis concerns different social, economic and cultural factors of our society, such as the growth of tourism, students' mobility and mobile app users, as well as the increase of the pace of life that takes out time from the domestic routines.

The data collection was made through two types of the methodology. The first refers to my *in loco* experience in the 25 stores I have visited and an in-depth interview to one associate member of one of the biggest SSLs' chains in Portugal, which allowed to conceptualize and design the main functionalities of a mobile app, named by *Laundnet*. The second regards the survey carried out by applying a structured questionnaire to a sample of 100 SSL users of the laundries of scope. Based on the literature review and on the characteristics of the SSL service, an explanatory model was designed to estimate the intention to use a mobile application, which would solve the potential waste of time problem The different theoretical hypotheses were assessed through descriptive statistical methods, principal components analysis and linear regression modeling.

Results point out that *Laundnet* is a viable app, given the great receptivity from the majority of the respondents, and that its use is mostly determined by the perception of utility, and not significantly by the waiting time experience, as initially expected.

Key words: Mobile application; Self-service laundries; Waiting experience; Principal components analysis; Regression model

JEL Classification: M15, O31

LAUNDNET: A TIME-SAVING MOBILE APP FOR SLL USERS

Resumo

A presente dissertação aborda o negócio das lavandarias self-service em Portugal, particularmente em Lisboa, e contextualiza-o através de uma análise diacrónica. A escolha deste tema está, sobretudo, relacionada com a minha experiência pessoal neste tipo de lojas e com a percepção da existência de um problema de perda de tempo associado à utilização do serviço. Assim, esta investigação incide no estudo da viabilidade e potencialidade de uma aplicação de telemóvel que, ao permitir a pré-reserva de máquinas de lavar e secar online, visa colmatar a eventual perda de tempo. A legitimidade desta análise baseia-se em diversos factores sociais, económicos e culturais da nossa sociedade, como o crescimento do turismo, da mobilidade de estudantes e de utilizadores de aplicações de telemóvel, e o aumento do ritmo de vida que retira tempo às tarefas domésticas.

A recolha de dados foi realizada aplicando duas metodologias. A primeira refere-se à minha experiência *in loco* nas 25 lavandarias que visitei e a uma entrevista em profundidade a um dos sócios de uma das maiores cadeias de LSS em Portugal, que me permitiu conceptualizar e desenhar as principais funcionalidades da aplicação de telemóvel, designada por *Laundnet*. A segunda diz respeito à pesquisa concretizada através da aplicação de um questionário estruturado a uma amostra de 100 utilizadores das LSS em análise. Com base na revisão de literatura e nas características do serviço das LSS, foi desenhado um modelo explicativo para estimar a intenção de uso da aplicação, que resolveria o potencial problema de perda de tempo. As diferentes hipóteses teóricas foram avaliadas através de métodos estatísticos descritivos, da análise de componentes principais e do modelo de regressão linear.

Os resultados indicam que a *Laundnet* é uma aplicação viável, dada a grande receptividade por parte da maioria dos inquiridos, e que o seu uso é principalmente determinado pela percepção de utilidade e, não tão significativamente, pela experiência de tempo de espera, como inicialmente previsto.

Palavras-chave: Aplicação de telemóvel; Lavandarias self-service; Tempo de espera; Análise de componentes principais; Principal; Modelo de regressão

Classificação JEL: M15, O31

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Finally, it is worth mentioning the availability and kindness of all the self-service laundry owners and users I have contacted along this journey.

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Abbreviations

GDP   Gross Domestic Product

INE   Instituto Nacional de Estatística

INUT   Inquéritos Nacional aos Usos do Tempo de Homens e de Mulheres

KMO   Kaiser-Meyer-Olkin

LH   Local Housing

LRM   Linear Regression Model

PCA   Principal Components Analysis

SSL   Self-service laundry

SST   Self-service technology

TPD   Turns per day

UK   United Kingdom

USA   United States of America

UX   User Experience

Chapter 1: Introduction

1.1 Purpose and relevance

The idea for this master's dissertation lays fundamentally on my empirical observation of the business trends in Lisbon. For the last three years, I have been noticing an emergence and increase in the number of Self-Service Laundries (SSLs) in the city. This boom has not just been a subject of my personal reflection, media is aware of it as well (Zambujo *et al.,* 2015). TV news, press news and articles indicate this phenomenon. But which are the factors behind it?

The more cosmopolitan and young environment Lisbon has been experiencing over the last years, due to students' mobility and tourism attracting millions of people to the capital can be one of the reasons for the increase in the SSL service. According to statistical data from Direção-Geral das Estatísticas do Ensino Superior e Ciência (DGEEC), the number of foreign students enrolled in private and public institutions of higher education in Portugal has increased 74% in the last five years, since the academic year of 2009/2010. These incoming students represent around two hundred nationalities and come mainly from Spain, Italy and Poland (Silva, 2016), followed by the Países Africanos de Língua Oficial Portuguesa and Timor-Leste (PALOP + TL), which, likewise, heavily figure in the list (Oliveira *et al.*, 2015). When it comes to Europe, 2013 was a milestone year, as the number of welcomed Erasmus students accomplished the 3 million target (European Commission, 2014).

These facts are aligned with global trends that reveal an increase of student mobility worldwide over the past decades, especially since the last quarter of the 20th century. In 1975, the number of foreigner students worldwide was 800 thousand, and in 2011 it registered 4.3 millions (Oliveira *et al.*, 2015).

Moreover, this growth trend is likely to continue. The European commission predicts that by 2020, at least 20% of "all graduates from the European Higher Education Area

should have spent a period of time studying or training abroad" (European Commission, 2014:5).

The same upward trajectory can be applied to tourism. Recent publications from the Instituto Nacional de Estatística (INE, 2016) indicate that in 2015, Europe received more than half of the total number of international tourists worldwide, showing a 4.7% growth when compared to the previous year, 2014. Coming to the Portuguese scenario, the country hit records a couple of years ago. There were 48.9 million overnight stays in national hotel accommodation establishments, a growth of 11% from the preceding year; hotel occupancy rate reached a historical value of 46.1%, along with the tourism impact on the gross domestic product (GDP), which accounted for 4.3 % (Aguiar & Teixeira, 2016). Lisbon was the second most selected destination registering approximately a quarter (25.3%) of the total overnight stays (INE, 2016).

Such successful indicators of incoming students and tourists can be one possible justification for the emergence of the SSLs in Portugal. An increasingly globalized world encourages the share and importation of new business concepts like the SSLs. Furthermore, the laundromats can serve as a complementary service for the tourism sector, not just for the tourists themselves, but for hotels, restaurants, shops, among others. Simultaneously, this type of stores means a cheap and necessary service for the foreigner students who cannot afford much, nor have the possibility to own a washing machine at home.

It's is not surprising that the SSLs business has been entitled in the press as "The business that emerged from the crisis" (Neves, 2015), referring to the economic crisis situation experienced in Portugal from 2008 until 2014, dragged by an international financial crisis (Observador, 2016). This economic conjuncture was responsible for thousands of unemployed people who saw SSLs as a good, yet much unknown and unfamiliar, sort of investment.

Nevertheless, the SSLs might owe their existence to other sociological aspects. The progressively stressing way of life, that takes out time from the domestic routines and pushes people to effective, cheap and quick solutions, may come into the equation as well. In fact, "time" has been the most used noun in the English language (Oxford English Dictionary, 2006), which mirrors its importance in the contemporary society we

live in. Use of time (Robinson & Godbey, 2000), time poverty, and *tempo* of everyday life have been subjects of study by many sociologists, economists and consumer behavior analysts, who often present the matter in contrast to the idea of leisure revolution foreseen in earlier studies on industrial societies (Wajcman, 2008).

According to Virilio (1995; 2000), since the beginning of Modernity until today, there have been series of events that compressed time. The faster transports (trains, cars, and airplanes), communication (telegraph, radio, telephone, satellites) and production are seen as potential causes in the origin of the *acceleration societies* of the Western world (Rosa, 2003), characterized by the feeling of time shortage, which disables people from completing tasks and activities that are vital to them.

This concept of acceleration is directly related with information and communication technologies (ICTs) and can be deconstructed into three categories: *technological acceleration*, *acceleration of social change* and *acceleration of the pace of life* (Wajcman, 2008). Relating both first and third types, the author finds a paradox. Provided that the first means the speed up of production, communication and transportation, there should be more time left for everyday actions. This conclusion enters in contradiction with the *acceleration of the pace of life*, which predicts less time for quotidian routines. It's the coexistence of both that gives birth to the acceleration societies we live in.

This time paucity is depicted by media as well, who have contributed to the emergence of a new social status paradigm. If in the 90s commercials used to emphasize leisure hobbies as sign of wealth and popularity, today they were replaced by advertisements that portray a busy lifestyle, whose people should be proud of. An example of this is the Wall Street's Journal 2016 slogan: "People who don't have time, make time to read the Wall Street Journal" (Bellezza *et al.*, 2016). Despite the study presenting conclusions about this status shift, specifically within the USA context, this busyness feeling is also perceived in Europe and in Portugal, although not as strongly. According to the Inquérito Nacional aos Usos do Tempo de Homens e de Mulheres (INUT) almost four out of ten people, consider that his/her working schedules do not adapt to their social, family and personal appointments (Perista *et al.*, 2016). These conclusions may be associated to the fact that, on average, about a third of the survey respondents

answered that, in the previous year, they had worked besides their working schedules several times per month.

When it comes to domestic performance, 63.4% of women declared feeling too tired after a day at work to make some of the household chores, and around half has admitted thinking about these activities at work. As regards to household affairs and laundry care, there is a huge disparity in gender when looking to the average time spent by both. Women take approximately 3 hours per day doing home activities and spent 33 minutes taking care of the clothes (mainly of the household). Conversely, men dedicated one hour less to the first and only 19 minutes to laundering, usually for their own use.

Despite these conclusions showing that a lot of time is devoted to house duties and that both men and women show concerns about time poverty, only few recur frequently to external domestic support services. For instance, only 3.9% has appealed to clothes washing's and just 4.3% to ironing's.

Besides my perception of springing up SSLs in Lisbon, which can be explained by the aspects already mentioned, there was a second decisive factor that pushed me to make a further research about SSLs: my personal experience as user of this service. During my Erasmus exchange in Leuven, Belgium, I recall having to wait for long periods until getting a vacant machine, every time I went to the closest self-service laundry I had from my student residence. In fact, this problem was caused by absence of information in advance. Provided the lack of vacant machines in the store, users like me ended up wasting time, and were forced to either wait until one was free or to find another laundry, remaining, however, with the problem of occupation uncertainty.

Bearing in mind this past experience with SSLs abroad, and taking into consideration the settlement of more and more laundries in Lisbon, I thought of a way to minimize the time waste issue and to reduce the level of occupation uncertainty. It seemed there was a window of opportunity for a new service. After reaching this conclusion, I started brainstorming forms of services and through this path to improvement, I thought of online technology and time as allies. This empirical connection was, in fact, already fostered by the results of the "Internet in Britain" survey (Dutton *et al.,* 2005), in which 73% of the respondents stated that Internet helped them saving time.

Inspired by McLuhan, and his definition of technology as extension of the human body (McLuhan, 2001), I came up with the idea of testing-out the viability of a mobile app that allowed the pre-booking of laundry machines online and aimed to avoid the waste of time problem. It would be an app to serve a growing market likely to feel the same concerns in this daily domestic routine.

However, it is important to reflect on the general and basic requirements and characteristics of the global and Portuguese markets, before ever considering it as an option. The access to internet, the use of smartphones and, more specifically, the mobile apps trend are some topics to be debated.

When it comes to the first point, the access to internet is intrinsically connected to the level of country development. However, in both cases, developing and developed countries, there have been growing perspectives since 2005. According to the statistical portal Statista, it is estimated that in 2017, 81% of people from developed countries will have access to internet, compared to almost half (41.3%) of people living in developing countries. In Portugal, 74% of households had access to internet, in 2016.

Regarding the use of smartphones, and according to a market research from Kantar TNS and Google, ["Consumer Barometer. The Internet in Numbers 2012 - 2016"] (2016), the percentage of smartphone users globally was of 70% in 2016, which means that it has doubled in four years, since 2012. In Portugal, this value is lower, 59% of the population is a smartphone user and computer is still the most used device with 65%. Nevertheless, the outcomes of this study preview that the laptop is being overtaken by the smartphone as the primary device for online use.

Finally, in what concerns mobile apps, the study by the Accenture Mobility study (2015), directed to almost two thousand decision makers for digital strategy and technologies from large size companies worldwide, expresses great enthusiasm about the creation and implementation of mobile apps within the business context. It is viewed by most participants as the dominant interface of the future and equally a key driver of user engagement. This vision is strengthened by the companies' clients whose demand for mobile services is huge.

These scientific bases on the access of internet and use of smartphones, the novelty of the matter and the potential gaps and room to improve that it may entail, were crucial

for the decision of developing this master dissertation: a time-saving mobile app for self-service laundry users.

1.2 Problem and research questions

This research focus on the time waste problem users may experience when using SSLs. One of the possible reasons for the issue may be associated to the lack of information in advance that users have access to, especially regarding the level of occupation of the washing and drying machines, which can cause them time constraints. For instance, clients may find themselves forced to wait until the drying and washing machine cycles are over, look for other stores or services and, eventually, give up taking care of their clothes. This represents not only a problem for the users but also for the owners of the stores, who are not capable of optimizing the business by controlling the level of greater and lesser influx they have on their laundromats.

Hence, this study looks over the hypothesis of whether SSL users have ever experienced waste of time problems when using the service. Confirmed this first premise, the second step will consist on figuring out if these clients consider that a mobile app could be a solution. There by, the research problem (A1) and main goal (A2) of this dissertation can be formulated in the following way:

A1: SSL users experience waste of time problems due to lack of information in advance about the level of occupation of laundry machines

A2: A mobile app that allows the pre-booking of laundry machines online is a solution

The two research questions are:

Q1: Have SSL users ever experienced waste of time problems?

Q2: Could a mobile app that allows the pre-booking of washing/machines online, be a solution?

In order to answer these questions, it is important to design the profile of a SSL user regarding the following aspects: socio-demographics; utility level and user satisfaction;

waiting experience; and use of mobile apps. This consumer profile brings in a few secondary research questions:

Q3: Who is the SSL user? What's his/her gender and age?

Q4: When do they use laundromats? How often?

Q5: How satisfied are SSL users about the service provided?

Q6: What is the payment method mostly used by customers?

Q7: How do they react when no machines are available?

Q8. Are SSL users accustomed to deal with mobile applications?

Q9: What is their opinion on a mobile app that allows pre-booking machines?

Only after these questions are answered, it will be possible to know if the mobile app is an effective tool to oppose the problem.

1.3 Objectives

The main objective of this dissertation is to test-out the viability of a mobile app that aims to mitigate the potential waste of time problem felt by SSL users, as well as to present its concept and a proposal of the guidelines, designing features and functionalities for further development.

Therefore, this dissertation aims to evidence that the appliance of this new online service is an added value for an existing business, a win-win service for both owners and users of the SSLs.

1.4 Dissertation structure

I have started this chapter by introducing the purpose and relevance of this dissertation, the problem and research questions and, finally, the goals. Henceforward, I will present the remaining topics that constitute the structure of the thesis (Chapter 1).

As in every master work, a theoretical approach is needed. Thus, I divide the historical contextualization (Chapter 2) into three main sections. The first is the laundry overview, where I make a chronological analysis of laundry practices and industry worldwide since the very early stage until the present moment. The second section focuses on the SSLs, specifically on the emergence and evolution of the laundromats. I will approach the matter, firstly, in a broad sense, adopting a global perspective, and then, in the third section, I will pass to the Portuguese scenario, where the scope of my dissertation is set.

In order to substantiate this subject and demonstrate and prove my initial empirical observation about the potential of this self-service in the country, I will make an industry analysis (Chapter 3), and present statistical data regarding the broad market and the four segments it comprehends. Then, I go over the Laundry Care market in depth, analyzing its size and growth. Subsequently, I will focus on particular aspects of the business such as size and growth, business life cycle and seasonality. This chapter will include some of the data provided by Mr. Vítor Simões, associate member of one of the biggest SSLs' chains in Portugal, Jardins da Roupa, in a face-to face interview held on the 14th August 2017, in one of his stores at Centro Comercial Bela Vista. This meeting had the main objective of collecting information about the SSL market and business in general, as well as getting a feedback on the concept of *Laundnet* from an expert in the field. The most important insights of this interview are integrated along the different chapters of this dissertation.

Later on, in Chapter 4, I will approach the self-service business and the SSLs within a theoretical framework and the main theories and conceptual models that support them. The next stage concerns the explanation of the methodology used to collect and analyze the data. I will define the scope of the research and present the questionnaire structure and the statistical methods used to test the hypotheses integrated into the hypothetical conceptual model.

In Chapter 5, I will include the presentation of the results in two main sections. The first concerns the outcomes from my *in loco* experience. The second regards the results that derive from the questionnaire analysis. This will make me ready to develop an app presentation (Chapter 6), that includes the design and main service features, as well as a state-of-the art research, which considers the competitive forces of the laundry care segment and will help position the app within the market.

Finally, as a conclusion (Chapter 7), I interpret the results, considering the main initial goals of the dissertation and present the final notes regarding the limitations encountered in this research, as well as the aspects that can be furtherly explored in future.

Chapter 2: Historical contextualization

2.1 Laundry overview

In the absence of absolute dates for the beginning of laundry, it is commonly assumed that it was born with human kind and the creation of clothes, thousands of years ago. Going back to these most ancient times, the portrait that usually comes to our mind when thinking about laundry is the one of women by the river rubbing clothes on rocks.

Despite this imaginary still being a reality in some developing countries today, such ancestor task has been evolving over the years, not only in terms of methods but of tools, and keeps seeing constant progression for the time being. Apart from this vague Neolithic allegory, there are historical elements that prove the existence of laundry practices and facilities in the times of the Ancient Egypt and the Roman Empire. Regarding the first, little data can be found, it is only known that pharaohs had someone in charge of their laundry and that clean and white clothes were especially important for royal aesthetics. Documented in the "Histories of Herodotus" (Grene, 1988), there is a description that mentions it: "They wear linen garments, which they are especially careful to have always fresh washed" (Grene, 1988:2.37.1). As for the Romans, considered genius pioneers in so many other areas, they were key figures in the provision and development of laundry services and processes in large scales. Making use of their infrastructures, namely irrigation and drainage systems, as well as aqueducts, they gave birth to the first laundries, the *fullonicae* (De Feo, *et al.*, 2014). Although it is still ambiguous to whom they were intended to, it is estimated that they were meant for both private customers and professional clientele (Flohr, 2003). Such as in the Egyptian culture, being clean was a sign of differentiation, *lautos* was the designation of the "well-washed" Roman citizen (Bradley, 2002).

Contrary to the patriarchal idea of laundry as a feminine task, drawings found on the walls of *fullonicae* ruins*,* show that the service was carried out by men and women, the "fullers", who were responsible for washing, whitening, re-dying, drying and pressing the clothes (De Gisi & De Feo 2012; Flohr, 2013). Not only them, but the whole Roman society was dedicated to the laundering cause. One of the most important ingredients,

the urine, which served as bleaching agent was produced by inhabitants of the region and collected from public urinals. Besides the ammoniated water, other organic and rudimentary detergents were used. While *creta fullonica* was applied to remove grease and enhance colors, burnt sulphor was used to bleach during the drying process (Bradley, 2002).

The fall of the Roman Empire sets the beginning of the middle ages and brings a new laundry landscape. The religious heritage left by Rome, "Christian doctrine institutionalized by the Church" (Tulchinsky & Varavikova, 2000:4) associated to the lack of a centralized power, led to the emergence of new beliefs and superstitions that can be related to the lack of hygiene practices reported during this uncertain medieval period.

The Great Plague of the 14th century, which reduced the European population to about one third, prompted hydrophobia among people. Some physicians like Galen believed that water was a means of inoculation (Sherrow, 2001), a "Liquid, (that) by its pressure…could open up the pores and heighten the danger" (Vigarello, 2008:1:8). However, the water itself was not the cause of epidemics. The greater concentration of people in towns, not followed by the improvement of sanitation systems, as well as the coexistence of animals and their debris, turned the access to safe water harder to get.

Nevertheless, after times of stagnation to what regards laundry care, the Renaissance period, precisely the Enlightenment, takes important steps towards the recognition of hygiene as a scientific matter. Fresh knowledge in areas such as medicine and physics contributed to some essential discoveries, for example, the contagion theory of disease by Fracastoro in 1546 (Nutton, 2012). Besides the persistence of bathhouses since the Greeks, especially in the Northern Europe, they were mostly accessed by the elites (Smith, 2007). When it comes to laundries as public spaces, they existed ephemerally in the form of religious rituals, the "Grand Wash", meant for spiritual purification. At these bi-annual events, people bathed and washed their clothes as a means to disengage their good/clean soul from their evil/dirty soul (Arpal Group, 2015).

During the Renaissance, laundry manners were hard intensive manual labor, but the invention of the first mechanized laundry machine in the very beginning of the Industrial Revolution, will again break the *status quo*. From the mid-1700s, cleaning

habits will change considerably, new socio-economic concerns will arrive and women's place in family and society is debated. Finally, in what concerns religion and hygiene, they will continue strongly tied, "Cleanliness is next to Godliness" becomes a common expression (Sherrow, 2001).

The first published studies on the introduction of the mechanized laundry, in 1766, are attributed to Jacob Schäffer, a German inventor, botanist, mycologist (Deutsches Museum, 2005). However, it is only in 1787 that the first washing mill is officially patented by Edward Beetham, in England. The pros and cons of this "time-saving" device upon its application in society are addressed in detail in the book by Kenyon (1791) entitled "free remarks on Mr. Beetham's patent washing mills". On the one hand, it is questioned if such technology disruption will negatively impact laundresses' profession, mainly executed by women from lower social classes who could end up losing their jobs. On the other hand, this unemployment problem is counterbalanced by the inventor, who advocates that labor force would migrate to other washing processes where women could be involved as well.

Apart from these objections, the washing mill was successfully adopted and became a trend among the cream of London society, much due to the enormous marketing apparatus - press advertisements, demonstrations and promotional brochures - surrounding it (Strachan, 2008). These devices were sold under the premise that they offered more delicacy in the treatment of clothes than hand washing. This triumph gave rise to new competitors and demanded new economic ("cost-per-wash"), efficient and ecological standards.

From the end of the 1800s onwards, there is registration of other laundry services, related patents and accomplishments that revolutionize the laundry industry and defined peoples' agenda. The 1846 Public Baths and Wash Houses Act in the United Kingdom (UK) was a milestone in what regards the intervention of the state within public hygiene, as it "legislated for the provision of public baths and laundries by local parishes" (Watson, 2014:5).

Another great achievement was the laundry soap, which is directly related to the arrival of new clothing materials, such as cotton, that replaced non-launderable fabrics like leather, wool, linen and alpaca (Shehan & Moras, 2006). New mass production

methods, such as Taylorism and Fordism, led to new forms of marketing and triggered the consumption of cleansing products that became affordable for almost every one. Instead of adopting the name of their compound ingredients ("borax") or generic designations ("blue starch"), laundry soaps were sold under a wide range of brands, packages and prices. Some British companies like Lever Brothers ("Breeze"), A. & F. Pears ("Pears"), Unilever ("Rinso") as well as American ones such as Procter and Gamble ("Ivory"), and Colgate-Palmolive ("Palmolive") were the first to produce laundry soap bars and powder detergents (Arpal Group , 2015). These washing products were strongly advertised during the intervals of TV programs, especially during the 1950s, when they came to be called soap-operas, and women soon incorporated these broadcasted laundry routines in their lives. Since the Victorian times, Monday was turned the "washday" followed by Sunday, the day for receiving visits and cooking (Fultz House Museum, n.d.). This housewife lifestyle is very well mirrored in the Victorian nursery rhymes that follow (Binney, 2012:51):

"They that wash on Monday
Have all the week to dry;
They that wash on Tuesday
Are not so much awry;
They that wash on Wednesday
Are not so much to blame;
They that wash on Thursday,
Wash for very shame;
They that wash on Friday,
Must only wash in need;
And they that wash on Saturday,
Are last sluts indeed"

Back again to the late 19th century, this "democratization of laundry" will foster the emergence of new services and new clients. No longer at the heart of domestic life, but as well in the form of an outsourced service, the first commercial laundries appear in California to provide miners washed and dried clothes during the Gold Rush era (McDonald, 2011). Until the 1920s, using these facilities becomes the norm for nearly every family in the USA, as well as for hospitals, hotels and restaurants (Shehan, & Moras, 2006).

Entrepreneurs and designers like the Huebsch brothers, Alva J. and Barlow & Seelig (founders of Speed Queen) are precursors of this first commercial laundries movement

and responsible for some of the technical innovations introduced in the industry until the 1940s. Nevertheless, this type of service will experience a decline in the post-World War II boom economy, when washing machines penetrate into the domestic realm. The growth of suburbs and the greater access to electricity made that "by 1940, more than 60 percent of the homes that had electricity also owned an electric washing machine" (McDonald, 2011: 16). Even so, a significant part of the population, who could not afford an electric washing machine, still relied on the old hand wash laundry methods and recurred to the commercial laundry services, performed, in the majority, by immigrants, generally black women (Shehand & Moras, 2006). This unfair burden of the feminine gender on domestic chores will continue to be discussed until today.

An example of the contemporaneity of the subject is the inquiry submitted in 2013 to Ireland's Magdalen Laundries. Despite its heavy concentration in this country, these religious asylums were spread all over Europe and North America. Since the 18th century until the end of the 20th, they were intended to house "women deemed fallen or otherwise undesirable" (Wecker, 2015:265), who through the work of laundry would greet their sins. Run by the Catholic orders, these half-state institutions sheltered victims of rape, incest and even prostitution who provided services to monasteries, convents, restaurants, airports and hospitals. The controversy of the theme focuses on the forced and allegedly unpaid labor imposed by the nuns and the unfaithful competition that it implied for the remaining laundry services in the market (Roberts, 2014).

The following table (Table 1) sums up the laundry discoveries and technological evolution already presented, in a chronological way, from the late 18th century until the 21st.

Table 1: Evolution of laundry technology

Before the 1800s	
1787	Washing mill - Edward Beetham, England
1782	Rotating Drum – Henry Sidgier, England
19th century	
1840s	1st commercial laundries
1862	Compound rotary washing machine – Richard Landsale, England
1869	Vertical axis, gyrator-type - George M. Bohlender, USA
1882	Electric iron – Henry Seely, USA
1870-1910	Proliferation of commercial laundries
20th century	
1907	Electric washing machine "Mighty Thor" - Alva J., USA
1916	Detergent discovered – Billing Charles, England
1918	Soap powder dispenser – John W. Beckmann, USA
1920s	Commercial laundries reach peak
1930s	Coin-operated laundromats become popular
1939	Truly automatic machines introduced
1946	*Tide* detergent enters market, USA
Post-WWII	Development of suburbs; manufacturers' goal: washing machine in every
1961	*Pampers* enter market
1964	Permanent press fabric/clothing . Levi Strauss & Co., USA
1994	Microwave dryer - Richard D. Smith, USA
21st century	
2000	*Dryel* - Unilever, England
2000:	Federal legislation about environmental standards for washing machines

Source: adapted from Shehan & Moras (2006)

2.2 Self-services laundries in the world

The history of self-service laundries can be related to the first Peabody Estates in London, social housing districts with communal facilities such as shared sinks, WCs, bath houses and laundry blocks, which lasted in the capital from 1864 until the 1970s (Watson, 2015), although showing up later in the rest of Europe and in the USA.

Nevertheless, the 1930s is the decade when these self-service stores firstly appear as a private profitable business using electric washing machines. Despite the growing receptivity of these appliances, commercial laundries services and electric washing machines were still not affordable for many urban and suburban families. In addition, many housewives were not convinced with this novelty and preferred the conventional handwashing method (Nicholas, 2016).

In order to attract this public, some of the commercial laundries' manufacturers decided to follow a differentiation growth strategy through the investment in laundromats, low-cost service facilities that aimed to instruct and familiarize women on the use and benefits of coin-operated appliances (McDonald, 2011). They were particularly popular in the US and in England, which, furthermore, have always been the cradles of modern laundry. The first American laundromat opened in 1934, in Texas, with limited hours of operation (Warren, 2014). In the UK, the primary launderette, "Central Wash", dates back to 1949, in Bayswater, London (Jackson, 2017). Regardless of some time lag between the dates of emergence of these laundries in both places, they had similar courses and developed alongside the sociological changes and technological innovations brought to the market.

From the 1950s until the 1980s, these spaces saw many alterations. Not only turned to operate round-the-clock 24/7, as welcomed new appliances. For example, the dryer, introduced in 1954 by the already mentioned Huebsch brothers, allowed huge and bigger loads of clothes (for example the duvet) to be dried in few minutes.

During the 60s, the owners of these conviviality and wellness stores were interested in turning them more appealing to customers through an updated and modern décor. Thereby, laundromats "shift a gendered activity from the home to the street" (Watson, 2015:5), what before was a confined private chores became a public activity. Curiously, this displacement is equally evidenced in the quotidian expression "airing your dirty laundry in public".

In England, the launderette boom refers to mid-1980s, when the number peaked at 12,500 units (Khan, 2010). They were generally run by single family members and concentrated in the industrial areas (Watson, 2015). It is also at this time that launderettes reach a spot in the media. From the British comic shows and films like

"Mr. Bean and Some Mothers Do 'Ave 'Em" and "My beautiful launderette", to the Levi's TV commercial to the sound of Marvin Gaye's "Heard It Through The Grapevine" song, launderettes were present in peoples' everyday lives (Nicholas, 2016).

In the United States, the industry prospered around the same time, as soon as the franchising business shoots up giving rise to the "Washaterias" – wash + cafeterias shops (NALI). These chained stores operated under a financing system, in which the franchiser offered "laundry packs" including not just the equipment, but other add-on business facilities such as cybercafes, car washes and coffee shops (McDonald, 2011). The gradual emancipation of women at work displaced them from the domestic realm where they had for centuries played the role of housekeeper, and pushed families to seek time-saving alternatives services like laundromats.

Although maintaining a certain popularity, the increasingly affordability of washing and drying machines at the end of the 20th century took laundry to its original core environment, the home, and contributed to the decline of the industry. In 2003, 92% of households held a washing machine, whereas in 2012 only 3000 thousand launderettes remained in England (Watson, 2015). There was also a shift concerning ownership. Nowadays, the majority of the owners are first or second generation immigrants from Asia and Middle East and their stores are located in medium-class and student neighborhoods.

2.2.1 Self-services laundries in Portugal

And if in England and the US laundromats are an old issue, in some European countries like Portugal it is a recent soulful business. Despite the fact that the first Portuguese self-service laundry opened in 1987, "Lava Neve" was an isolated case (Neves, 2015). The great boom started around four years ago. The economic crisis that the country was facing pushed some unemployed people to invest in new business concepts that were already a paradigm in other places such as France, Belgium and Germany.

Despite being a low-cost service just for short-term periods, the convenience and quickness may compensate, especially when washing machines breakdown or during winter when it is difficult to dry clothes (Gerivaz & Soares, 2014). Located in touristic

spots, immigrant neighborhoods or expensive residential areas, the truth is that these fresh stores usually look very modern and are well equipped. Some, like "Cotton Club", are revivalisms of the American "washaterias", others have extra features and services such as free Wi-Fi, TV screens, vending machines, books/magazines, ironing and sewing, which turn clients' waiting time more pleasant. With a diverse clientele, from the elderly, to students, tourists, divorced, hotels, restaurants and families, the SSLs are spread all over the country, even though more concentrated in the capital, Lisbon.

Chapter 3: Industry analysis

3.1 Definition and segments

The lack of statistical data about the laundry industry and SSLs made it difficult to me to develop this chapter of the dissertation. There is not much information about self-service laundries beyond the USA, where the industry is already mature and seems to be declining. Fortunately, I could contact Statista, who gently gave me access to one week research on the facts and figures of the Home and Laundry Care industry.

The following definitions of the market, its four segments and the Laundromat industry are mainly based in this statistical portal.

1. Home and Laundry Care
   a) Household Cleaners
   b) Dishwashing Detergents
   c) Polishes, Room scents and Insecticides
   d) Laundry Care
      i. Laundromat industry

1. Home and Laundry Care

The Home and Laundry Care market covers all consumer products for household care. The market is differentiated by application; detergents for fabric care, household cleaners for surface cleaning, detergents for washing dishes and specialty products including polishes, room scents and household insecticides. The market takes into account consumables for use in private households only; auxiliary products (e.g. mops and brooms), professional products sold via wholesalers and household cleaning services are not included.

a) Household Cleaners

The Household Cleaners segment covers all consumables for cleaning of surfaces, windows and toilets. Special cleaning agents, such as beeswax, auxiliary products for cleaning such as mops and brooms, products sold in wholesale quantities and household cleaning services are not included. Household cleaning detergents are the second most important segment in the Home and Laundry Care market.

b) Dishwashing Detergents

The Dishwashing Detergents segment covers cleaning products used for washing up and cleaning dishes. Detergents for dishwashers and dishwashing detergents for handwashing are included in liquid, powder and tab form.

c) Polishes, Room Scents and Insecticides

Polishes, Room Scents and Insecticides' is a small segment covering targeted cleaning materials for a clearly defined use. For example, polishes include special products for cleaning shoes, care of floors, furniture or cars.

d) Laundry Care

The Laundry Care segment includes all detergents purchased by the consumer intended for the care of textiles in the form of powder, tabs or liquids. Laundry Care is the largest segment in the Home and Laundry Care market with a market share of approximately 50%.

i. Laundromats Industry

The laundromats industry includes establishments that offer coin- or card-operated washers and dryers as well as establishments that operate self-service laundry and dry-cleaning equipment in apartments, dormitories and similar locations.

3.2 Market analysis

3.2.1 Size and growth

In order to examine the Home and Laundry Care market and the Laundry Care segment, I will compare the values of market size, growth and trends in the USA, Europe and Portugal. The first country is a reference point in what comes to the laundry industry and the SSLs business, and Portugal, still a newbie country in this industry, will be contextualized within the European landscape.

United States of America

It is estimated that the Home and Laundry Care market will amount to US$20,183M in 2017, in the US and grow annually by 3.5 % (CAGR 2017-2020), turning it the world leader of laundry revenues. The Laundry Care is its largest segment, with an estimated market volume of US$9,277M in 2017, and is expected to keep this position until 2020 (Figure 1).

Figure 1: Revenues of the Home and Laundry Care Market in the US (million US$)
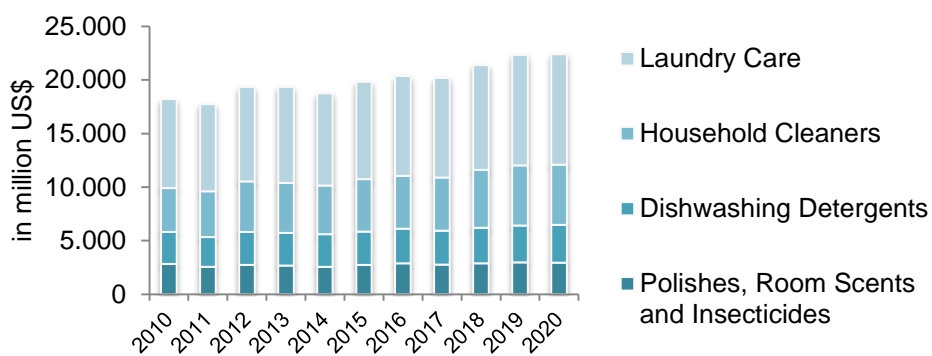
When it comes to SSLs, and according to the Coin Laundry Association (2017), there are around 29,500 thousand laundromats in the USA, which produce an annual gross profit of nearly $5 billion. The SSL industry has been in a decline trend, as Figure 2 shows.

Figure 2: Laundromats Industry Revenue in the US (millions US$)
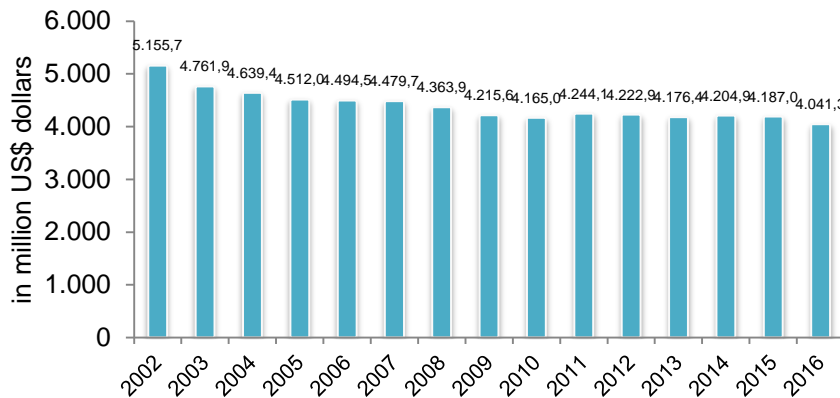
This industry revenue comes from different market segments that use the service or buy its products. In Figure 3, these markets are represented proportionally to their contribution for the total industry revenue (IBIS World, 2015). Renter using laundromats and using on-site laundry facilities are the two biggest segments and represent more than 60% of the total industry revenue, followed by the commercial; industrial; services industries and routes, colleges and universities and the homeowners.

Figure 3: Laundromats major market segments in the US (2015)
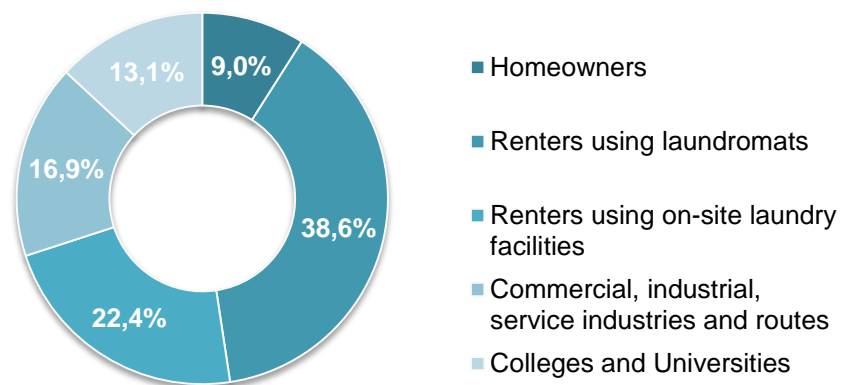
Europe

In Europe, the Home and Laundry Care market sales volume amounts to US$31,038M in 2017 and is expected to grow annually by 1.6 % (CAGR 2017-2020). Germany (US$5,112.8M), United Kingdom (US$4,526.6M) and France (US$4,321.0M) are the three top European countries, followed by the US, with the biggest revenues coming from this market. The Laundry Care is, as in the US, the largest segment with an estimated market volume of US$14,825M in 2017 (Figure 4).

Figure 4: Revenues of the Home and Laundry Care Market in Europe (millions US$)
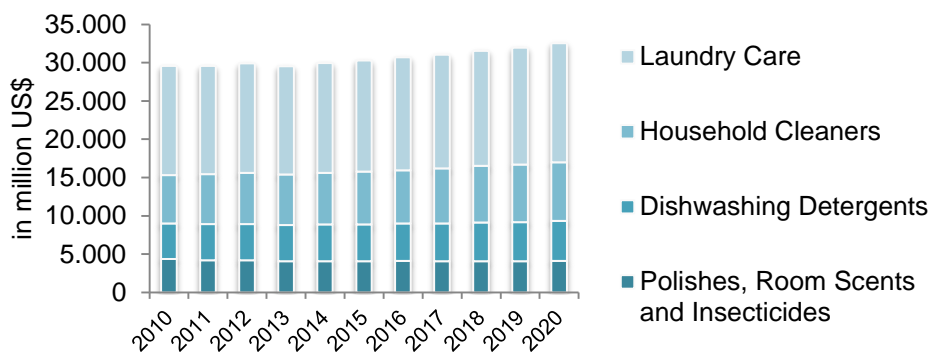
The SSL business is still not as developed in Europe as in other continents of the globe. According to Nielsen (2016), in a survey on home cleaning/laundry attitudes around the world, Europe falls behind the global average (6%) of launderette users, with only 3% of the population going to SSLs and stands behind other continents such as Africa/Middle East together. These results may, perhaps, derive from the fact that almost only half of the inhabitants (46%) of these two much more extensive regions can afford their own washer and dryer machines at home, with the rest feeling the need to recur to external low-cost services (Figure 5).

Figure 5: Self-reported laundry methods in the world (2016)
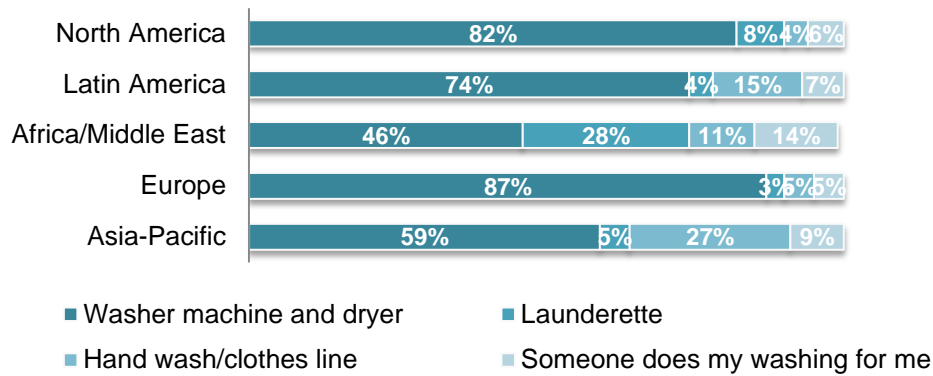
Portugal

In Portugal, the revenue coming from the Home and Laundry Care market is estimated to reach US$575M in 2017, and to grow annually by 0.2% (CAGR 2017-2020). The segment is the most profitable one in the country, within the Home and Laundry Care Market, and has been stable over the last years, as shown in Figure 6.

Figure 6: Revenues of the Home and Laundry Care Market in Portugal (millions US$)
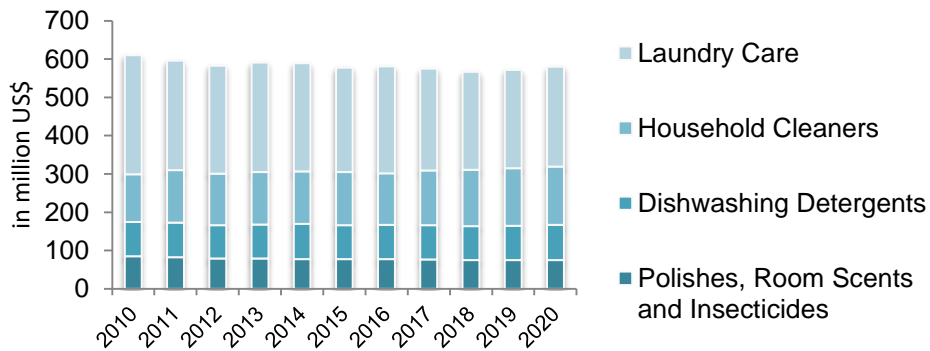
The SSLs, specifically, are included within a wider economic activity, which comprehends not only laundromats but all the services related to laundry. The definition that follows comes from the Integrated Metadata System (SMI, n.d.) of INE:

<u>*CAE - 96010 - Lavagem e limpeza a seco de têxteis e peles*</u>

*"Compreende as actividades das lavandarias (lavagem, passagem a ferro, limpeza a seco, tingimento, etc.) para todos os tipos de vestuário e artigos têxteis (carpetes, cortinados, etc.); executadas por processos mecânicos, manuais ou **automáticos (inclui máquinas accionadas por moedas e operadas pelo utilizador**), qualquer que seja o cliente (público em geral, empresas, instituições, etc.) ou o local. Inclui arranjos e alterações (inclui cerzido), recolha, entrega e aluguer de roupas (inclui uniformes) associadas às actividades das lavandarias, assim como serviços de passagem a ferro (com ou sem recolha e entrega) independentes das lavandarias."*.

According to my own data collection and research in Lisbon (county) in August 2017, there were 73 laundries in the capital (see Appendix A). These stores have opened in different years, but it was from 2014 that the industry jumped out, with the opening of 15 new stores. The great boom happened in 2016, when de number of SSLs almost doubled, reaching 29 stores, as Figure 7 shows.

Figure 7: Self-service laundries opened in Lisbon, 1987-2017 (Concelho)
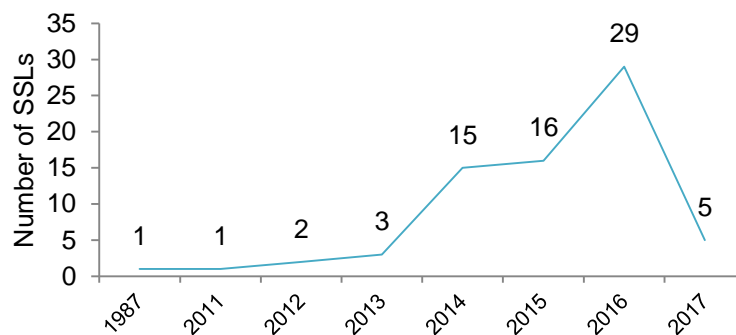
The disparity of values between 2016 and 2017 may be associated to two factors. The first regards the last time of data collection on the number of registered laundries, which does not contemplate the months post August 2017, when there may be new SSLs opening. The second concerns the market saturation of the industry in Lisbon, referred by Mr. Vítor Simões in the interview. According to him, less than 7% of Lisbon population uses SSLs and the market is saturated, as it has surpassed the 1 laundry per

15,000 inhabitants' proportion by around 200%, meaning that there is 1 laundry per 5,000 thousand inhabitants.

Taking into account the number of Lisbon residents, around half million, 509 000 (CML, 2011), the laundry per residents' proportion, and the listing of the 73 stores, there is a match concerning the market saturation projections, which is around 208%.

3.2.2 Business life cycle

SSLs can be seen as an "immune business" as they can reach success even in periods of recession. On one hand, in times of crisis, people cannot afford the reparations of laundry machines or the buy of new ones, so will be prone to access SSLs, perceived as a short-term low-cost solution. On the other hand, in times of prosperity, people may move to new housing facilities that do not own laundry equipment, feeling the need to use self-services laundries, even if temporarily.

Among the many factors that determine the success of this business, are the demographics (population density, age, income). An increasingly concentrated population demands good quality laundromats, and the growth of the SSLs market is directly related to the increase of the population.

Another important indicator concerns the number of national and regional house renters, as they are great users of laundromats. In Lisbon, the number of houses for renting has decreased by 33% from 2011 until 2016 (Soares & Silva, 2016). These results derive largely from the extraordinary growth of local housing (LH) and foreign investment in real state in the capital. In 2015-2016, LH registered a 47% growth in the region and in the last year, it was already 1% of Lisbon GDP (Costa, 2017).

Regarding the business life cycle and its trends, SSLs are in different phases depending on the country they are located. Whereas in the US and the UK, it is a mature business, with signs of decline, in Portugal it is a 4-year business still on the growth stage.

In order to accomplish growth, laundry owners may bear in mind the "turns per day" (TPD) concept – gross revenue that refers to the number of cycles (turns) each machine will average per day. The TPD gathered during the opening year must cover all the

initial costs, and shall account for upcoming growth, as the break-even point may take some months or years to reach (Figure 8). When it comes to clients, a laundromat takes on average one to two years to achieve a loyal customer base, which uses the same store regularly. That is why initial marketing investments are crucial.

Figure 8: Break-even point of self-service laundries
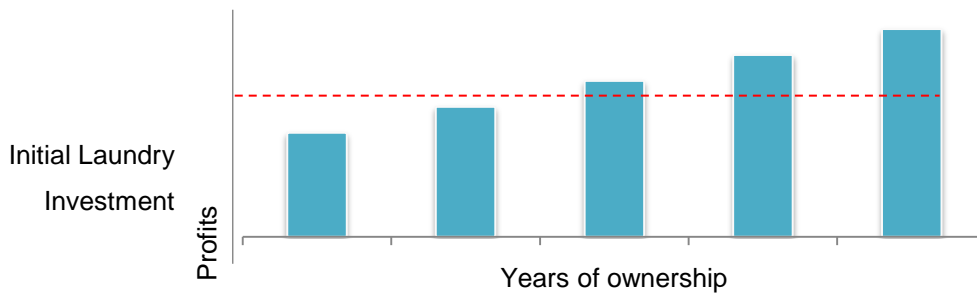
3.2.3 Seasonality

In general, SSLs are highly dependent on seasonality. The high season usually takes three months that can be from November until March, winter months in which rainfall periods abound. In these months, dryers are the preferred machines as the lack of sun and warmness hampers the drying. This is, however, subject to the country meteorological conditions that are always a bit uncertain.

The location of the stores can influence and change this peak-season. For instance, in touristic crowded areas, such as downtowns, the season of greatest affluence may be the summer time, when most foreigners visit the country. In residential areas, especially in immigrants and youth neighborhoods, the need to use SSLs can be constant the whole year or even superior during the cold months.

This seasonality is not only perceived in months, but as well in week days. In many cases, stores can draw 65% to 75% of their revenues from Friday to Sunday, when most of users can attend the service, out of the work schedule (McDonald, 2011).

Chapter 4: Methodology

4.1 Theoretical framework

In the last decade we have been assisting to an increasingly appliance of self-service technologies (SSTs) to everyday services. These are "technological interfaces that allow customers to produce services without a service employee's involvement" (Kokkinou & Cranage, 2013:435) and its emergence is directly related to the spread and commercial development of the World Wide Web.

Self-check-in in hotels and airports, self-service kiosks (SSKs) at fast-food restaurants and hospitals, self-service checkouts at supermarkets, ATMs, self-service petrol stations and, of course, self-service laundries, are just some of the huge number of examples one can provide.

But why are SSTs becoming so popular these days? This type of technologies is reaching new customer segments and replacing traditional service delivery channels, because it offers a wide range of potential benefits. Not only may reduce operational costs and waiting times, but also rise delivery alternatives, improve productivity and increase the time of service availability to the customer, who is no longer dependent on the store opening hours.

According to the Service-Dominant logic (S-D logic), SSTs encompass co-production and co-creation processes where the costumer makes use of operand (material resources, credit card and internet) and operant resources (his own cognitive ability to operate the technology). The outcome of the UX is the generation of value, perceived by the client (Hilton & Hughes, 2013). The same type of resources is applied to the supplier, provider of codified knowledge enclosed in the interface. Moreover, extra supply resources, such as staff support, may interfere whenever the SST interface fails.

These processes are exemplified in the following model of resource integration through SSTs, as shown in Figure 9. According to this model, actor's evaluation of value is explained by the SST interface (operand resource) which, in return, is the result of three

different factors: 1) Costumer resources; 2) Supplier resources; and 3) Additional supplier resources provided in case of service failure.

Figure 9: Model of resource integration using self-service technology
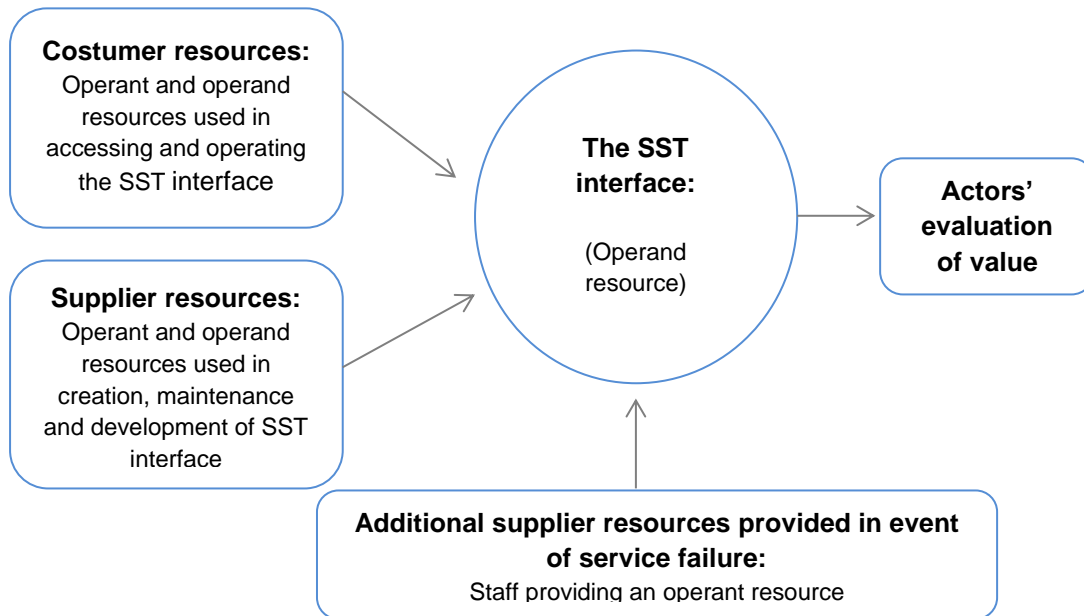
Source: Hilton & Hughes (2013)

The dual choice SSTs vs staff lays on both extrinsic and intrinsic motivations of the client (Oh, Jeong & Baloglu 2014). In the first, the selection is driven by the rewards and consequences that the action may entail, such as ease of use, reliability, process control, autonomy, privacy, social acceptance and external pressure. When it comes to the intrinsic motivations, such as effectiveness of the service, the ultimate goal is the inner satisfaction – fun, enjoyment, playfulness and desire for interpersonal interaction (for example with staff, perceived as more qualified to do the service). The costumer's choice of one channel over another lies in the counterbalance of the forces implied in the two.

Hence, it is possible to design a diagram of potential interactions among the variables that compose extrinsic and intrinsic motivations, as well as with the final decisive intention of using SSTs.

The following conceptual model of SST vs staff-based service (Figure 10) shows the factors behind the desire for interaction or perceived usefulness for the self-service user, which will ultimately lead to the intention of using SSTs. All these motivations establish negative (H-) and positive (H+) hypothetical connections among them, which are numbered from H1 to H11.

The factors that link positively and are on the genesis of perceived usefulness of SSTs are: ease of use (H4+); privacy (H5+); and autonomy (H8+). At the same time, these relate negatively to desire for interaction (H8-, H9-, H10-, respectively). On the contrary, effectiveness relates positively to desire for interaction (H11+) and, subsequently, negatively to perceived usefulness (H7-), as the user considers that staff is more helpful than SSTs. The desire for interaction with staff links negatively to perceived usefulness (H3-), as the first finds the interaction with SSTs difficult to handle, therefore not useful. Hence, if there is a perceived usefulness of SST, the user is intended to use it (H1+). Conversely, when the user feels desire for interaction with staff, he/she does not find usefulness in SSTs and, consequently, is not likely to use the self-service method.

Figure 10: Conceptual model of SST vs. staff-based service
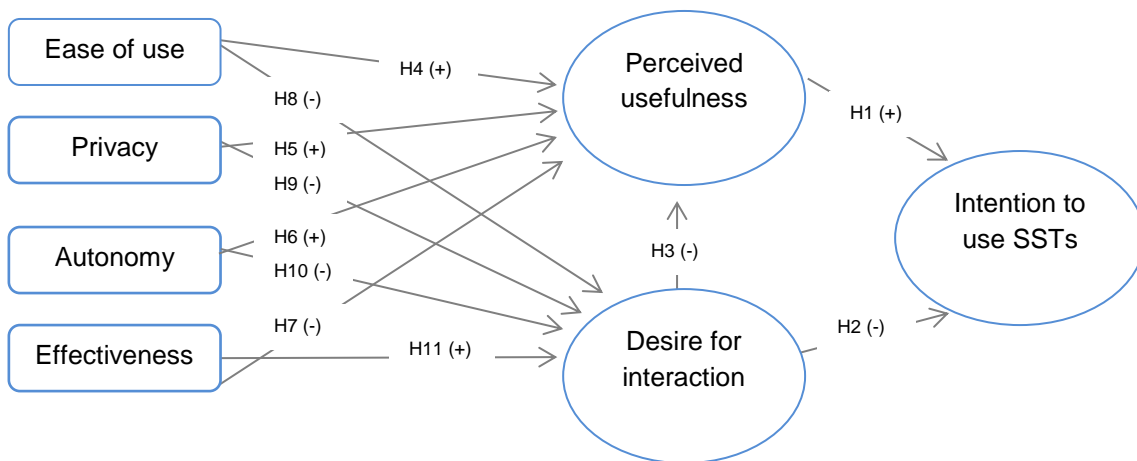
Source: Oh, Jeong & Baloglu (2014)

Other analytical approaches like the queuing theory and operation models applied to real-world situations, such as simulation, are mainly focused in analyzing the relation of SSTs and time reduction, as waiting time is perceived to be the key factor when evaluating the level of customer satisfaction and quality of the service. These links are fostered by the 2010 Hospitality Technology SST Survey (Blair, 2010) in which 94% of the hotel managers respondents said they wanted to implement SSTs to improve customer satisfaction and 68% of the costumers believed that SSTs would reduce waiting lines.

These waiting experiences are fundamental for the costumer's first impression on the service and can condition its future use. They occur because "capacity is fixed and peak-time demand can exceed the available supply" (Kokkinou & Cranage, 2013: 435). This flaw of resources is weighted by the queuing theory, which determines the number of resources needed to achieve an acceptable waiting time and examines whether a limited set of elements like staff, facilities and equipment are enough to provide in due time services to clients. Expressed through a number of variables and equations, this theory lacks the integration of conditional logic and interactions in the system.

To overcome these restrictions, the simulation approach is complementary to test real-world contexts. It has been applied to several fast-food companies such as Burger King and Taco Bell, to observe the impact of operational changes (different schedules, extra employees, reservation policies) in waiting times and length of queues.

However, this chained triangular relationship SSTs→Time-reduction→Customer satisfaction, is complex. Hueter & Swart (1998) concluded that the perception of waiting time only occurred after an average of 3 minutes of waiting and that, until then, clients were insensitive to it. Moreover, the impact of SSTs in waiting times and service-level is highly influenced by its processing times and failure rates (Kokkinou & Cranage, 2013). The ability of the person to efficiently deal with the interface and the willingness to choose it to the detriment of human contact are subjective to demographical and socio-psychological aspects such as gender, age, past-experiences, etc.

Despite the benefits that SSTs can bring, there are some disadvantages associated to remote serving, especially regarding the loss of interpersonal communication and

human bonds, as well as employee's unemployment. The introduction of SSTs into business services requires a whole new restructuring and reconfiguration of the companies that adopt them. Peoples' roles and needed skills will change, therefore, training programs, different management strategies and acquisition of specific resources will be required to assure that the interface is accessible to everyone.

4.1.1 Self-service laundries

From the last years, SSLs have been introducing more and more modern SSTs into their facilities and arranging new remote services, operated by owners and costumers, via mobile apps. Laundromats have accompanied this "cashless society" (Jackson, 2014) we live in, by replacing coin-machines to more convenient and safe card systems, which hinder vandalism and theft, since money is collected once a week from a single source, and not on a daily basis nor from each machine.

Whereas in the old model, money was either exchanged by laundry chips or directly introduced into the devices, new advanced payment methods use touch screen cashpoints, where clients chose the program and the washing/drying machine they want to activate. At these SSTs interfaces, the costumer enjoys multi-payments methods, such as credit, debit and client cards (operand resources) that can be loaded in advance with a certain amount of money. In most laundry rooms, the machines are identified with numbers and displayed in the cashpoints that show the procedure steps in multiple languages. This card system is an extremely important strategy for costumer's retention and loyalty, as users may enjoy in-store promotions and other privileges that people without client card do not have. Other modern means include smartphone payment apps, that recognize scanned quick response (QR) codes from the laundry machines and instantly deduce the funds corresponding to the cost of the service.

Remote monitoring can serve both SSL owners' and clients' goals. The first may access laundry rooms through mobile apps and control the operation of the machines. For instance, intervene when machines are failing, re-starting the laundry program, or ask for professional reparation whenever it is needed. One of the biggest SSL chains in Portugal, Jardins da Roupa, has already adopted this type of app. In the interview made to Mr. Vítor Simões, he has told me that the company has come up with an innovative

app in which administrators can control washing/drying machines at distance and avoid loss of money and time for clients.

When it comes to costumers, they can receive information on the availability/occupation of laundry machines, and enable "finishing laundry" alerts via SMS and email. They may, as well, report system failures and request themselves the technicians that will fix the problem, through a barcode system that detects the damaged machine and GPS software that tracks the nearest expert in the area. Some SSLs provide customer service through call center (telephone line of support), who may send a courier to the store within 15-20 min. approximately.

All these online tools contribute to a more dynamic flow inside the stores especially during high-peak seasons, avoid time-waiting periods and, consequently, improve UX and maximize owners' revenue. Despite these benefits, there are some laundry owners who still prefer the coin system or opt for mixed systems (cash and card), because laundry cashpoints require higher maintenance as there are several breakdowns for petty cash. In these circumstances, money change machines are used to easy and quick the payment process.

4.2 Modelling the intention to use the *Laundnet* app

Based on the previous literature review and on the characteristics of the SSL service, it is possible to develop an explanatory model of the intention to use a mobile application (*Laundnet*) to solve the potential waste of time problem (Figure 11). The model allows the following hypotheses to be established:

H1 Gender

H2 Age group   are related to the use of mobile applications in general

H3 Work status

H4 The waiting experience is related to the level of utility users give to *Laundnet*

H5 The different dimensions (D1,D2,D3,…) of satisfaction with the service can explain the intention to use the *Laundnet* app

H6 The waiting experience

H7 The use of mobile apps   can explain the intention to use *Laundnet*

H8 The perceived utility of *Laundnet*

Figure 11: Explanatory model of the intention to use the *Laundnet* app
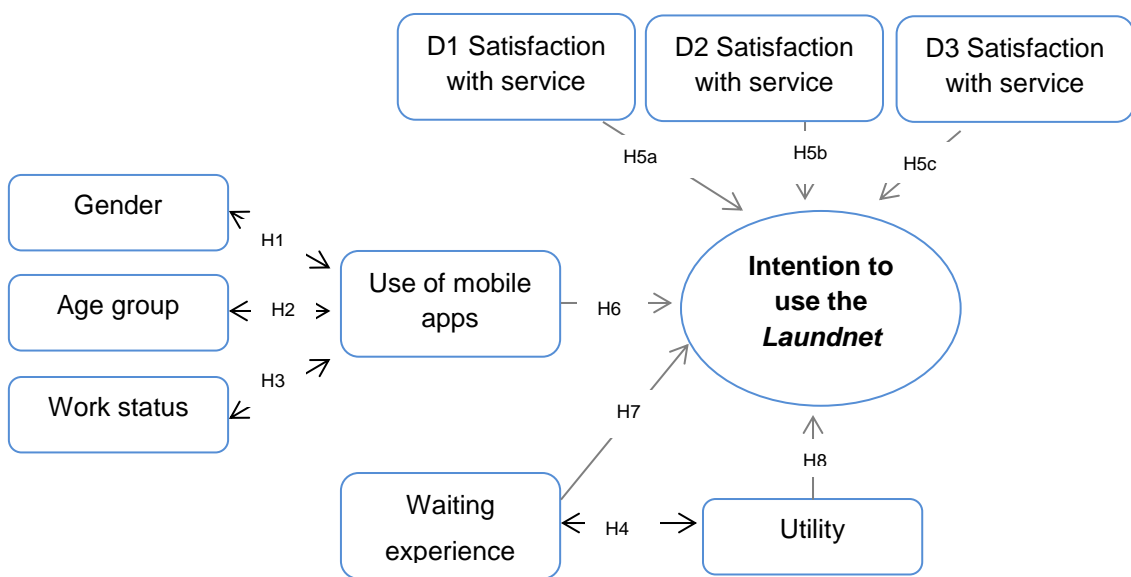
4.3 Population and sample

In order to find out if there is a relation between the use of SSTs and reduction of time-waiting and to evaluate the potential of a mobile app that would serve to solve this problem, through the pre-booking of laundry machines, I have chosen a quantitative research approach, based on a survey towards SLL service users with a structured questionnaire as the data collection instrument.

Target population

The target population is the set of elements (people or objects) that possess a common characteristic and from whom we want to collect information. In this research, it concerns all the self-service laundry users of Lisbon county (concelho), which is the area where registered data on SSLs is available.

Sample

The sample is a subset of the target population, the individuals who will participate in the data collection. A multistage sample process will be applied: firstly, a random sample of 25 laundries will be randomly selected out of the list of the 73 that exist in the county of Lisbon. Secondly, in each laundry, a sample of 4 users will be selected by convenience. These 100 users will be approached in different days of the week and hours, and asked if they accept to be interviewed; the following introduction is made by the interviewer: "This questionnaire is part of an investigation to elaborate a Master dissertation in International Management at ISCTE Business School. Its main purpose is to collect information on potential waste of time problems faced by self-service laundry users and to inquire about your opinion on these matters. The expected time to answer this questionnaire is only 5 minutes. Your participation is very important to bring to fruition this research. All your answers are anonymous and confidential. Thank you for your availability!"

4.4 Questionnaire structure

The questionnaire will be subdivided into 4 sections:
- **Section 1:** Socio-demographic characterization (questions 1 to 3) includes identification of gender, age group and work status (Table 2)

Table 2: Socio-demographic characterization

Gender
Q1. Please indicate your gender
Female
Male

Age group
Q2. What is your age?
Under 18
18-27
28-45
46-65
Over 65

Work status
Q3. What is your occupational status?
Student
Employed
Unemployed
Retired

- **Section 2:** Utility level and user satisfaction (questions 4 to 8), includes frequency, period and day of use, satisfaction with the different service aspects and method of payment (Table 3).

Table 3: Utility level and user satisfaction

Laundry use period
Q4. How often do you use self-service laundries?
Without regularity
Less than 12 times per year
Less than 4 times per month
Once a week/every week
More than once a week
Q5. When do you mostly use the self-service laundry? Choose one or more options
Morning (7am-12pm)
Afternoon (1pm-7pm)
Evening (after 7pm)

Laundry use day
Q6. Which is /are the day(s) of the week you mostly use the self-service laundry? Choose one or more options
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday

Sunday

User satisfaction

Q7. For the following aspects, indicate your degree of satisfaction using the next scale:

1 – Completely dissatisfied; 2 – Dissatisfied
3 – Neither satisfied nor dissatisfied
4 – Satisfied; 5 – Completely satisfied

a) Washing quality
b) Drying quality
c) Washing duration
d) Drying duration
e) Soap quality
f) Number of machines available
g) Waiting time until a machine is available
h) Price of the washing
i) Price of the drying

Payment method

Q8. How do you usually do your payment?

With cash
With credit card

- **Section 3:** Waiting experience (questions 9 to 12), includes frequency of occurrence and waiting time as well as the user reaction to waiting (Table 4).

Table 4: Waiting experience

Vacant machines

Q9. Have you ever had to wait for vacant machines?

Yes
No

Frequency

Q10. If you have answered "Yes", how often does it occur?

Always
More than half of the times
Less than half of the times
Rarely

User reaction

Q11. When all machines are occupied, what do you normally do?

Wait until one is available
Go to another laundry
Choose an alternative service
Give up the service

Average waiting time

Q12. How much time on average do you wait? Choose on or more options

Less than 15 min
15-30 min
More than 30 min

Section 4: Mobile app (questions 13 to 15), collects information on user, the expected utility level for a SSL app and the probability of use (Table 5).

Table 5: Mobile app

User
Q13. Are you a user of mobile applications? (For example, email, games or other mobile services)
Yes   No
Utility level
Q14. How useful do you consider a mobile app that allows the pre-book of laundry machines online?

Very useful
    Moderately useful
    Not at all

Probability of use
Q15. On a 0-10 scale, what is the probability of using an app of that type?
(0 = not probable at all ; 10 = very probable)

4.5 Statistical methods

The outcomes of the survey will be applied to solve the potential waste of time problem. Upon results of the questionnaires, I will be able to figure out if the mobile app is perceived by users as a problem solver and further develop this online service. To analyze the data, different statistical methods will be applied using the Statistical Package for the Social Science software (SPSS) version 24.

4.5.1 Descriptive methods

In order to analyze the survey results and evaluate the validity of the conceptual model, I will use descriptive methods. I will describe each section of the survey, using frequency distribution tables, as well as statistical descriptive measures of location

(mean, median and mode) and dispersion (standard deviation). Furthermore, contingency tables for the crossing of the categories of two variables (cross tabulations) will be applied to evaluate the hypothetical associations among the variables. More specifically, contingency tables will allow assessing the hypothetical relations between the gender (H1), age group (H2) and work status (H3) and the use of mobile apps, and the association between waiting experience (H4) and the perceived utility of *Laundnet*.

4.5.2 Principal components analysis

Principal Component Analysis (PCA) is a statistical method that transforms a set of initial correlated variables into new dimensions of linearly uncorrelated variables, which are named principal components (PC). The purpose is that a smaller number of dimensions will account for most of the variance of the original variables. The best solution is found when the minimum number of retained components accounts for the maximum proportion of variance in the original variable. The total proportion of retained variance is one of the criteria that can be used in deciding how many components to retain, but the most popular one is the Kaiser criteria: only the components whose variance (eigenvalues) is greater than 1 shall be retained.

To help in interpreting the meaning of each PC, several methods of rotation are available. Varimax rotation helps to increase interpretability by maximizing the dispersion of loadings within principal components and items displaying low loadings (<0.5) or cross-loaded on two or more constructs should be removed from the interpretation of each principal component. To evaluate if the data is adequate for the application of principal components analysis, both the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity (which tests the overall significance of all correlations in a matrix) can be used. The recommended cut-off for the KMO statistic is 0.70. The *p*-value of the Bartlett's test should be below 0.001. In terms of sample size required for reliable principal components, a minimum ratio of 5 observations per item will be accepted (Reis, 2001).

In this study PCA will serve to identify the underlying dimensions of users satisfaction with the SSL service, by transforming the original 9 satisfaction correlated items – 1) price of the washing; 2) price of the drying; 3) washing quality; 4) soap quality; 5)

washing duration; 6) number of machines available; 7) waiting time until a machine is available; 8) drying quality; and 9) drying duration – into a smaller number of uncorrelated dimensions, without losing most of the original dispersion present in the observed data.

4.5.3 Regression model

The linear multiple regression model (LRM) is used to estimate the effect of a set of independent variables (X_1, X_2, X_3, …) on a dependent variable (Y). The linear multiple regression model assumes that the dependent variable is linearly related to the independent variables, the residuals are normally distributed with constant variance and that the independent variables are not correlated. The coefficient of determination R^2 can be calculated to evaluate the goodness-of-fit of the model and represents the proportion of the variation of the dependent variable Y explained by the variation of the independent variables X_1, X_2, X_3, …, i.e. the proportion of the original variance in *Y* that is explained by the regression model. When R^2 is equal to 1, the dependent variable is perfectly predicted by the independent variables. Thus, the closer R^2 is from 1, the better is the goodness-of-fit of the model, the closer is from 0, the worse the model explains the behaviour of the dependent variable. Because R^2 increases each time an additional independent variable is added to the regression model, even when it could have no effect on the dependent variable, the use of an *adjusted R^2* is recommended.

In this dissertation, the LRM will be applied to find out the effect of the following variables on the intention to use *Laundnet*:

- – Dimensions of satisfaction with service (H5a, H5b, H5c, …),
- – Use of mobile apps (H6),
- – Waiting experience (H7), and
- – Perceived utility level of the *Laundnet* app (H8).

Chapter 5: Results

5.1 *In loco* experience

During my visits to the 25 SLLs of scope for analysis (see Appendix B), I have observed *in loco* the experience of the users, the *modus operandi* inherent to this type of stores, the additional services provided and the prices charged for washing/drying programs.

5.1.1 *Modus operandi*

The *modus operandi* in SSLs is quite intuitive. Instruction charts are often on the walls of the stores (in different languages), explaining the users how to interact with the machines in simple steps. Normally, the layout of a SSL corresponds to the ratio of 3 washing machines for 2 drying machines, or 4 washing machines for 3 drying machines These appliances are often numbered and labeled by capacity (in kg or in volume).

In Lisbon, I have come across two types of SSLs, the ones that use a coin-operated system and those that use a mixed system, combining client card and cash through cashpoints. In both types of SSL, customers begin by choosing the machine they want by its capacity, which is identified on the outside of the appliance. Afterwards, the procedure may follow two different directions. In case of a coin-operated machine, the individual directly inserts the coin into the machine to activate it. In the mixed system, the user must go to the cashpoint and select the machine that corresponds to his/her preferences, through its number. Subsequently, the user must pick the type of preferred washing/drying program intended, which is differentiated by the kind of clothes, temperature and duration.

When it comes to drying, the user must select the number of cycles and, on the machine itself, the temperature. The final step consists on the payment that can be done either with cash or client card. As soon as the clothes are introduced in the machines, the duration is displayed, so the user can be aware of the time to collect the clothes.

5.1.2 Additional services

The majority of SSLs I visited offer extra-services other than washing/drying (see Appendix C). In order to provide a more pleasant environment for the boring waiting times, these stores have added additional spaces such as kids' areas, where children can play with toys or read books while parents do the laundry.

Other features include background music, TV screens, vending machines, lockers, magazines and free Wi-Fi, which allow clients to be more comfortable and entertained, and handle personal/business matters while they wait. Except for rare exceptions such as the SSL chain Speed Queen where soap has to be poured into the machine (there is often a vending machine that sells it), in most cases the detergent is provided and automatically added to the washing process.

When it comes to complementary services, SSLs have evolved into a "full-service" business, as customers are allowed not just to wash and dry, but to have their clothes ironed and sewed. Usually placed inside or next to the SSL, these ironing and sewing facilities enable users to have all the services concentrated in one single point, avoiding unnecessary displacements to other establishments.

5.1.3 Price

From this *in loco* experience, I have registered the prices practiced in the 25 SSLs visited and verified that they do not differ much from store to store (see Appendix D). They can be more or less expensive upon the utilization of client card and, of course, upon the capacity of the machine being used.

Regarding the first point, only 3 laundries out of the 25 did not present a client card system, so the price for those is fixed. For the remaining stores, the prices change upon the use of client card. The discount may be significant, reaching up to 27% in the washing and 25% in the drying.

Concerning the prices within the same franchiser, they may also vary. This might happen because the first movers who have already occupied a certain area/neighborhood

define the initial prices. Therefore, the second movers have to, at least, equal the prices of the first to arrive, which can be higher than the first prices defined for the brand.

5.2 Sample characterization

Socio-demographics

From the 100 questionnaire respondents, 63% were female and 37% were male. These values are in agreement with the results of the INUT study previously mentioned, which concluded that women are still more responsible to household affairs and laundry care than men. From these respondents, the majority (77%) had ages comprehended between 28 years old and 65 (Table 6). The least present group was the elderly, composed by people aged 65 years or more.

Regarding the work status (Table 7), more than half of the people interviewed (61%) was employed, followed by the retired (15%), the students (12%) and the unemployed (12%) groups.

Table 6: Sample distribution by age group

		n	%
	18-27	19	19.0
	28-45	44	44.0
Age group	46-65	30	30.0
	More than 65	7	7.0
	Total	100	100.0

Table 7: Sample distribution by work status

		n	%
	Student	12	12.0
	Employed	61	61.0
	Unemployed	12	12.0
Work status	Retired	15	15.0
	Total	100	100.0

5.3 SSL service use and satisfaction

When it comes to the frequency of laundry use (Table 8), the majority of respondents, (59%) either use the service once a week/every week (33%) or with no regularity (26%). Concerning the laundry use period (Table 9), 43% of the interviewed SSL users do their laundry during the morning, being the weekends the most crowded days with respectively 48% of users on Saturday and 42% on Sunday (Table 10). The most used payment method is cash (56%.)

Table 8: Laundry use frequency

		n	%
Laundry use frequency	With no regularity	26	26.0
	Less than 12 times per year	12	12.0
	Less than 4 times per month	23	23.0
	Once a week/every week	33	33.0
	More than once a week	6	6.0
	Total	100	100.0

Table 9: Laundry use period

		n	%
Laundry use period	Morning (7am-12pm)	43	43.0
	Afternoon (1pm-7pm)	30	30.0
	Evening (after 7pm)	27	27.0
	Total	100	100.0

Table 10: Day of the week

		No		Yes	
		n	%	n	%
Day of the week	Monday	75	75.0	25	25.0
	Tuesday	81	81.0	19	19.0
	Wednesday	71	71.0	29	29.0
	Thursday	80	80.0	20	20.0
	Friday	77	77.0	23	23.0
	Saturday	52	52.0	48	48.0
	Sunday	58	58.0	42	42.0

Regarding the level of user satisfaction (Table 11), the items with the highest degree of satisfaction (satisfied/completely satisfied) were the drying quality (90.7%) and the washing quality (88.3%), followed by the washing duration (85.3%) and the drying duration (83.4%). On the contrary, the aspects showing lowest level of satisfaction were the price of the washing (53.2%), the number of machines available (55.2%), and the waiting time until a machine is available (61.4%). These same three items show the highest percentages of dissatisfied/completely dissatisfied users (respectively, 16.0%, 18.8% and 11.5%). The same conclusions can be drawn from the mean values of the 9 items (Table 12): the top aspects in terms of average satisfaction are related to the washing and the drying quality and duration (all $\bar{X} > 4$), and the lowest are related to the waiting time until being served and the price of the service.

Table 11: Frequency distribution of the level of satisfaction

	Completely dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Completely satisfied
	%	%	%	%	%
Washing quality	.0	.0	11.7	60.6	27.7
Drying quality	.0	1.0	8.3	61.5	29.2
Washing duration	.0	2.1	12.6	57.9	27.4
Drying duration	.0	5.2	11.5	56.3	27.1
Soap quality	1.1	6.4	27.7	40.4	24.5
Number of machines available	.0	18.8	26.0	41.7	13.5
Waiting time until a machine is available	.0	11.5	27.1	45.8	15.6
Price of the washing	3.2	12.8	30.9	44.7	8.5
Price of the drying	1.0	5.2	25.8	53.6	14.4

Table 12: Satisfaction level (means and standard deviations)

	Mean	Standard Deviation
Washing quality	4.2	.61
Drying quality	4.2	.62
Washing duration	4.1	.69
Drying duration	4.1	.77
Soap quality	3.8	.92
Number of machines available	3.5	.95
Waiting time until a machine is available	3.7	.88
Price of the washing	3.4	.93
Price of the drying	3.8	.80

PCA was applied to the 9 items of satisfaction and it was possible to extract 3 principal components or dimensions of satisfaction that explain 66.3% of the original variance. KMO statistics (0.711) shows this analysis is acceptable and the Bartlett's Test of Sphericity (p=0.000) confirms the existence of reasonable correlations between the variables. Table 13 presents the loadings of each variable for the 3 principal components extracted after Varimax rotation allowing the following interpretation of the new dimensions:

- Principal component 1: Price / Quality relation, because the variables with highest loadings are price of the washing and of drying, washing quality, soap quality and washing duration;
- Principal component 2: Waiting experience since the 2 variables with highest loadings are the number of machines available and waiting time until a machine is available;
- Principal component 3: Drying service with the variables drying quality and duration being the most important.

Table 13: Principal components of user satisfaction

	Component		
	1	2	3
Price of the washing	,822	,284	-,114
Price of the drying	,750	,323	,011
Washing quality	,650	-,070	,501
Soap quality	,605	-,095	,300
Washing duration	,517	,271	,343
Number of machines available	,061	,844	,164
Waiting time until a machine is available	,249	,831	,134
Drying quality	,069	,091	,882
Drying duration	,149	,364	,687

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 7 iterations.

5.4 Waiting experience with the SSL service

When it comes to the waiting experience frequency, 67% of the SSL users have passed through it and in 86% (Table 14) of the cases that happened in less than half of the times (51.6%) they went to the store, or rarely (34.4%). When confronted with no available machines, 59% of the users choses to wait until one is available, which can, for the majority of the users (62.1%), take 15 to 30 minutes to occur (Table 15).

Table 14: Waiting experience frequency

		n	%
	Rarely	22	34.4
	Less than half of times	33	51.6
Frequency	More than half of the times	8	12.5
	Always	1	1.6
	Total	64	100.0

Table 15: Waiting time on average

		n	%
	Less than 15 min	21	31.8
Waiting time on average	15-30 min	41	62.1
	More than 30 min	4	6.1
	Total	66	100.0

5.5 Use of mobile apps

The majority of the respondents in this survey (81%) are mobile app users. In order to assess hypotheses H1, H2 and H3, the use of mobile apps was cross-tabulated with the three socio-demographic variables. Table 16 presents the results of the use of mobile apps by gender and shows no association between the two variables, as the percentage of female and male mobile app users in the sample is the same.

Table 16: Use of mobile apps by gender

| | | | Mobile app user | | |
			No	Yes	Total
Gender	Female	n	12	51	63
		%	19.0%	81.0%	100.0%
	Male	n	7	30	37
		%	18.9%	81.1%	100.0%
Total		n	19	81	100
		%	19.0%	81.0%	100.0%

The age group (Table 17) and the work status (Table 18) are associated to the use of mobile apps. The younger groups are the ones with biggest concentration of mobile app users, with respectively 94.7% (18-27 years) and 88.6% (28-45 years). Regarding the work status, every student is a mobile app user, followed by the employed (90.2%). There is a big discrepancy when compared to the remaining categories: 58.3% of the unemployed and 46.7% of the retired are mobile app users. So, hypotheses H2 and H3 are confirmed, but not H1.

Table 17: Use of mobile apps by age group

| | | | Mobile app user | | |
			No	Yes	Total
	18-27	n	1	18	19
		%	5.3%	94.7%	100.0%
Age group	28-45	n	5	39	44
		%	11.4%	88.6%	100.0%
	46-65	n	11	19	30
		%	36.7%	63.3%	100.0%
	More than 65	n	2	5	7
		%	28.6%	71.4%	100.0%
Total		n	19	81	100
		%	19.0%	81.0%	100.0%

Table 18: Use of mobile apps by work status

| | | | Mobile app user | | |
			No	Yes	Total
	Student	n	0	12	12
		%	0.0%	100.0%	100.0%
Work status	Employed	n	6	55	61
		%	9.8%	90.2%	100.0%
	Unemployed	n	5	7	12
		%	41.7%	58.3%	100.0%
	Retired	n	8	7	15
		%	53.3%	46.7%	100.0%
Total		n	19	81	100
		%	19.0%	81.0%	100.0%

60% of the respondents considers that *Laundnet* would be a very useful application (Table 19). Moreover, it has been verified a relation between the average waiting time and the level of utility perceived for *Laundnet*, as the waiting time experienced by users of the SSL service increases, the level of perceived utility for *Laundnet* increases too (Table 20). This result confirms Hypothesis H4 that states the utility perceived for *Laundnet* is positively associated to the users' waiting experience.

Table 19: Level of utility of the mobile app

		n	%
Level of utility	Not at all	8	8.0
	Moderately useful	32	32.0
	Very useful	60	60.0
	Total	100	100.0

Table 20: Level of utility by average waiting time

			Mobile app: level of utility			
			Not at all	Moderately useful	Very useful	Total
Waiting time average	Less than 15 min	n	1	9	11	21
		%	4.8%	42.9%	52.4%	100.0%
	15-30 min	n	2	12	27	41
		%	4.9%	29.3%	65.9%	100.0%
	More than 30 min	n	0	0	4	4
		%	0.0%	0.0%	100.0%	100.0%
Total			3	21	42	66
		%	4.5%	31.8%	63.6%	100.0%

Regarding the probability of use *Laundnet* (Table 21) (rating scale 0 = not probable at all to 10 = very probable), more than half of the respondents (51%) attributed the maximum value (10 = very probable) and 93% of the respondents consider a level of probability 5 or higher. On average, this sample gives a probability of 8.09 (median and mode of 10 and standard deviation 2.53 (Table 22)).

Table 21: Frequency distribution of the probability of use of *Laundnet*

		n	%
Valid	not probable at all	2	2.0
	1	2	2.0
	3	1	1.0
	4	2	2.0
	5	14	14.0
	6	2	2.0
	7	9	9.0
	8	12	12.0
	9	5	5.0
	very probable	51	51.0
	Total	100	100.0

Table 22: Descriptive statistics of the probability of use of *Laundnet*

	Mean	Median	Mode	Standard Deviation
Probability of use	8.09	10	10	2.53

The probability of using *Laundnet* (Table 23) is slightly higher for mobile apps users ($\bar{X} = 8.15$) than for non-users ($\bar{X} = 7.84$). No associations are found between the 3 satisfaction dimensions (price/quality relation, waiting experience and drying service) and the probability of using *Laundnet* (Table 24).

Table 23: Probability of use for users and non-users of mobile app (means and standard deviations)

	Mobile app user	N	Mean	Std. Deviation
Probability of	No	19	7.84	2.693
use	Yes	81	8.15	2.506

Table 24: Association between the probability of using *Laundnet* and the satisfaction dimensions

		Price/Quality relation	Waiting experience	Drying service
Probability of use	Spearman's rho	-.038	.003	-.048
	n	94	94	94

To evaluate Hypotheses H5a, H5b, H5c, H6, H7 and H8, a linear regression model was estimated. The following independent variables were included in the model to explain the variation of probability of use of the *Laundnet* app (dependent variable):

– The three dimensions of satisfaction with the SSL service: price/quality relation, waiting experience and drying service;
– Being a mobile apps user;
– One dummy variable for the frequency of waiting experience measured with two categories: 1=Rarely, 0=Other situation;
– One dummy variable for the average time of waiting experience measured with two categories: 1= Less than 15 minutes, 0 = 15 or more minutes;
– Two dummy variables representing the levels of utility perceived for *Laundnet*: Moderately useful and Very useful.

The estimated linear model (Table 25) explains 72.4% of the variation of probability of use, but only the level of utility of the mobile app has a significant effect on the probability of use when compared to the group that considers the mobile app level of utility is none: those who consider the utility as moderate have a higher probability of use of the *Laundnet* app (+4.875 higher in a scale from 0 to 10); the increase in the probability of use is even higher (+8.183) for those that consider the mobile app very useful. None of the other variables included in the model have a significant effect on the probability of use of the *Laundnet* app.

Table 25: Explanatory LRM of the probability of use

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1,517	,890		1,705	,094
Satisfaction with Price/Quality	-,082	,180	-,034	-,457	,649
Satisfaction with Waiting	,225	,194	,084	1,158	,252
Satisfaction with Drying service	-,056	,180	-,022	-,308	,759
Waiting experience frequency	,352	,411	,066	,858	,395
Waiting experience time average less 15 minutes	,074	,398	,014	,186	,853
Mobile app user	-,016	,471	-,002	-,034	,973
Laundnet level of utility_Moderately useful [b]	4,799	,827	,877	5,807	,000
Laundnet level of utility_Very	8,209	,809	1,570	10,146	,000

a. Dependent Variable: *Laundnet* probability of use
b. Reference category for *Laundnet* level of utility: None
Adjusted R^2 = 0.724 (p=0.000)

Although the results point to a valid model, generalization to the population of SSL service users should be cautious. The perceived level of utility for the *Laundnet* app is significant but the assumptions of the LRM are hardly verified: the number of observations has been reduced to those who had the experience of waiting for an available machine, the sample is not random, and the assumption of residuals normality is not verified.

Upon the results already presented, it is possible to redefine the proposed conceptual model (Figure 12) that integrates the 6 confirmed hypotheses and discards the 4 remaining.

Figure 12: Conceptual model of the intention to use the *Laundnet* app
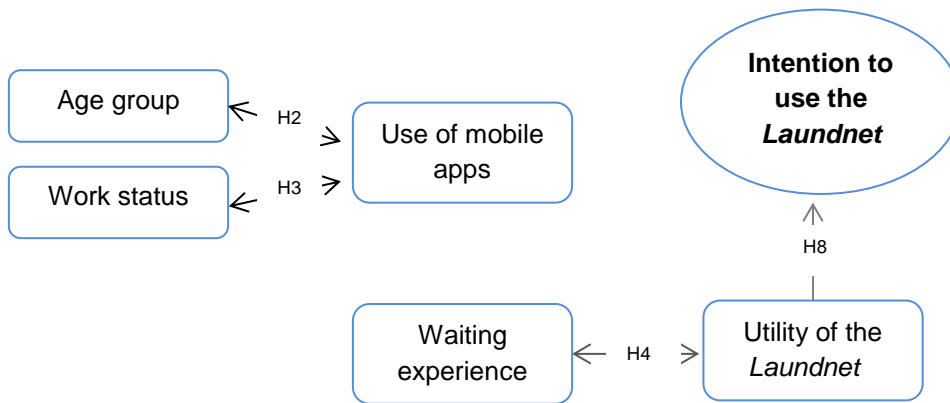
Thus, it is possible to conclude about the different degrees of relationships between the variables presented in the conceptual model:

H2 The age group is associated to the use of mobile apps: younger groups are the ones using more mobile apps.

H3 The work status is associated to the use of mobile apps: student and employed SSL users do use more mobile apps.

H4 The waiting experience is related to the perceived utility of the *Laundnet* app: the longer the SSL users need to wait for a machine, the more useful they find the *Laundnet* app.

H8 The perceived utility of the *Laundnet* app has an effect on the intention to use it: when compared to users that find the *Laundnet* not useful, the users that find the app moderately useful or very useful show a much higher probability of using this application.

Chapter 6: The *Laundnet* app

6.1 *Laundnet*

Laundnet is a mobile app that allows the pre-booking of laundry machines online to its target market, the SSL users, avoiding clients the need to go to the store and wait for a vacant machine, in case none is available. It is a win-win service either for customers and investors. On the one hand it delivers a quicker, cheaper and more efficient system to its users, who will be able to plan their lives better, affording time and money. App users enjoy more benefits than non-users. Besides the constant lower prices, equivalent to the ones charged for client card possessors, which are cheaper than the non-loyal customers', users can access happy hours, deals of the day and see clients' reviews and scores on laundries. On the other hand, it is a growth strategy that will concede investors a differentiation factor from its competitors. Through *Laundnet,* SSL owners will be able to adapt prices to day periods, considering the hours of higher and lower inflow and will be updated about costumers' opinions on the service provided. This last point is very important, as it permits a constant improvement of the service, synchronized with clients' demands. By enhancing predictability and, consequently, attracting other market segments (ex: smartphone users), owners are able to increase their profits.

The time-saving purpose of the app is portrayed in *Laundnet's* name, logo (Figure 13) and slogan. The first, *Laundnet*, is a composition of two words: laundry and internet. These two elements show the mixing and the adaptation of the old to the new, modern and technologic world we live in.

The logo is inspired by the retro colors of the late 40s, date of the first self-service laundries establishment in England, which at the time were called "launderettes". Finally, the clock along with the pun intended slogan refer to its drive - time saving - telling the user to "wa(tc)sh out his time".

Figure 13: *Laundnet* logo

With no intention of elaborating a complex development of the app, I have decided to present a simplified design of *Laundnet* layout, which illustrates the requirements and main steps that the user has to follow to book the laundry machine (see Appendix E).

Requirements

In order to be able to use it, the person must own a smart device such as a tablet or a smartphone with internet connection and a credit card. To download the application, the user must access Google Play (in case of Android system) or Apple App Store (in case of iOS system) and look for *Laundnet*, which is the name of the app. Once installed, the logo of the app will be displayed on the device contents screen, being ready to be used by following the next steps.

Step 1: Create a user account

As soon as the individual clicks on the app logo, he/she will face two options. The first regards the sign up, which is chosen if the person is not already registered. To create a user account, he/she must firstly fill some gaps regarding personal information like name, mobile phone number, email address and password. This profile will be associated to a credit card account, so the user must add some further details such as type of credit card, number, date of expiration and, finally, CVC code, which will be directly linked to the payment process. The second option regards the direct access to the app through email and password, provided that the person has already created a user account.

Step 2: Search a laundry

As second step, the person will start researching available laundries. The user is able to do this search in four different ways: by choosing the city or area in which he/her pretends to find SSLs; by typing the name of the concrete laundry he/she wants to go; or by using the GPS location feature, which indicates his/her the closest stores. After concluding this initial research, the individual will be required to choose the date and hour from which he/she wants to book the machine(s). At this point, the user is given the alternative to select the type of service: washing, drying or both.

Step 3: Sort and filter results

As third step, the user will proceed to an advanced research that will drill down the results. The individual can use two methods to refine the search: the sort tool (optional), which presents the results in a preference order (price, distance, user score, deals of the day) and the filter tool (recommended), which enables him/her to select free cancelation (if with 24 hours in advance), area (within the city for instance), the machine capacity (may be combined in case of washing and drying) and extra services (ironing, sewing, free Wi-Fi and kids area). Afterwards, the results are displayed on the left side of the screen according to the search criteria The name and address of the laundry, user score, extra services and price according to wash and/or dry program chosen, are some of the examples. Additional information, such as users' reviews can be accessed as well, by clicking on the name of the laundry. Although not very frequent, there are some laundries where detergent is not included, and in those situations it will be indicated.

Step 4: Book

Considering the results that show up, the user will be able to choose his/her preferred machines. In order to do that, he/she must select the wash program and/or dry program (presented in cycle's duration). Both program options may differ depending on the SSL. Upon choosing the wash and/or dry programs, the individual will see the available machines of each store by hour and must select the schedule that suits him/her the most. In case the person selects both programs, the available times of the drying machines are synchronized with the washing machine program duration previously selected, which

means that the drying machines available to book must start after the washing cycle is finished.

Step 5: Payment

Once the machines have been selected, the user is ready to click on the book button that will appear at the end of the results. This will carry him/her to the booking info screen, in which personal information and the booking details of the laundry (name and address) and of the machine(s) (capacity, program, number, booking hour and price) are described. The user gets information on the final price as well, and can then proceed with the payment by clicking on the pay button. The price of the service will be automatically debited from the user's bank account, without the need to fill in the credit card details again, as this stage was already completed in the first step.

Step 6: Confirmation and user's code

The last phase consists on the confirmation message, informing the person that the *Laundnet* code and laundry finishing alerts (10 minutes before the end of the program). are going to be sent to his/her mobile phone. At the laundry and at the booked hour, the user must introduce the *Laundnet* code in the cashpoint and activate the pretended machine. The user is given a time margin of 10 min. after the booking hour to trigger the washing/drying machine. As it is a pre-payed service, if the activation is not executed within this extra time, the machine will be automatically free for other users to book.

Other features

Other features of *Laundnet* include the possibility for a SSL owner to add his own store to the app listing and the check of past bookings and favorite laundries to the clients.

6.2 Porter's 5 forces

Porter's 5 forces is an appropriate tool to evaluate the powers that determine the level of competitiveness and attractiveness of *Laundnet* within the SSL industry. The author of this framework, Michael E. Porter, first published in 1979 (Porter, 1979), considers five forces that are represented in the following graphic, which I will, furtherly, analyze (Figure 14).

Figure 14: Porter's 5 forces
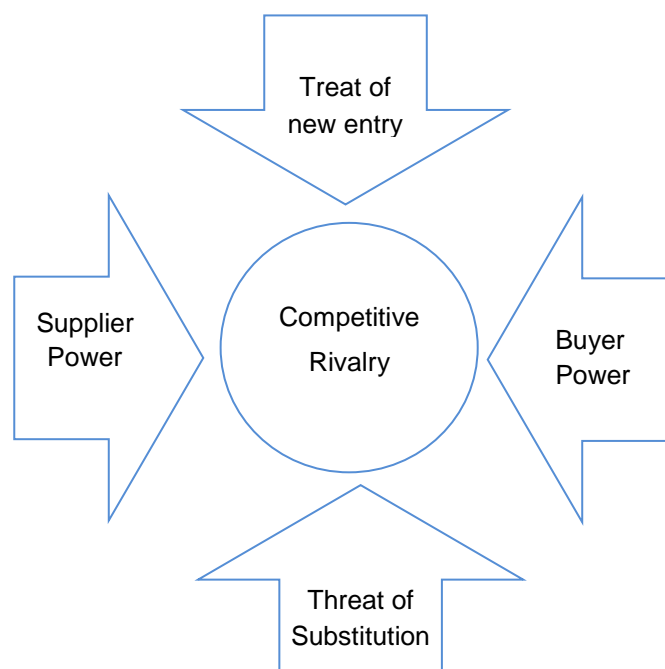
Source: Nguyen & Nguyen (2015)

Threat of new entrants

At first sight, the threat of new entrants seems to be high. The SSL business can be easily copied, especially in Portugal, where the business is still immature, and there are no players in the market that stand out from the rest. Moreover, the business does not require a huge expertise nor a great investment. A lot of information can be easily accessed and franchising solutions that offer "laundry packs" along with leasing

options, set up the business in a structure already tested and amortize the inaugural capital.

This initial investment can vary from 15,000€ to 40,000€ depending on the location, number and quality of machines, and extra features. According to the Coin Laundry Association, annual return on investment (ROI) is between 20% and 35% , which means that the breakeven point takes approximately three to four years to be accomplished. There are no special barriers to entry the business, apart from the bureaucracy related to city license and the opening of economic activity in the city council. However, as previously observed, the market, at least in Lisbon, is already saturated, and with no room for more SSLs, the growth trend can regress. This leads to Darwin's law of natural selection which, in this case, makes that only the best SSLs will survive at the end.

Bargaining power of suppliers

The bargaining power of suppliers is moderately high, as there are a limited number of companies that sell professional laundry equipment, leaving the SSL business strongly dependent on the quality of the products and on the performance of the suppliers. When it comes to washing and drying machines, Miele, Girbau, Primus, Electrolux, Krebbe and Speed Queen were the only brands I could registered in the 25 SSLs I visited. It is costly to change from one supplier to another, as it would imply the purchase of new machines for the store and the reconfiguration of cashpoints, which would have to display different washing programs and drying cycles.

In contrast, changing soap supplier is less expensive, even if it highly interferes with the logistics of the business. According to Vítor Simões, every four months, the scents stop being recognized by human smell, so the detergent shall be substituted. Furthermore, the bad quality of professional soaps available in the market is notorious and homogeneous products are scarce. A solution that starts being incorporated regards the introduction of nanocapsules to the clothes that release the smell during the drying process.

Threat of substitution

The threat of potential substitutes is relatively low. The remaining non self-service laundry services in the market, such as the traditional laundry stores and laundry chains (like 5àsec), belong to a premium service segment, which does not compete with the low cost and self-service segment of SSLs.

Bargaining power of costumers

The bargaining power of costumers is moderately low. The prices charged in the SSL stores do not vary much and there are not any other low-cost laundry services in the market, which takes out bargaining power from the users who need to accept the offers of this "basic need" service. Although being true that prices are almost the same in every store, the cost to switch to other service is almost zero and users can take advantage to demand lower prices or better conditions. Still, SSL users are usually loyal to one store, normally the closest to his/her house.

Competitive rivalry

Within the same typology, there are no direct competitors. The existent drop-off and pick-up laundry and cleaning services are not self-services, but ordered ones, and attract a different public, people with higher financial capacities. Nevertheless, these can be accessed in especial occasions by this same low-cost market segment, when the treatment of clothes demands higher delicacy (premium products; dry cleaning), or when the weight of textiles is too big for SSL machines. Other competitors include household washers and dryers. According to INE (2017), in 2015, the percentage of Portuguese households with washing/drying machines was 96,9%.

In case of incorporating *Laundnet* in the SSL business, the rivalry may be perceived within the SSLs industry, as users may prefer the laundries that offer this online service. Within the SSL business, there is high competition, as well as poor diversification and a great number of stores of this type.

6.3 SWOT analysis

Upon evaluation of the SSL business' competitors, it is time to present the SWOT analysis that contemplates the strengths, weaknesses, opportunities and threats of *Laundnet*. This strategic planning tool is attributed to Albert Humphrey during the 1960s-1970s, and comprises the internal and external factors that are supportive or unfavorable to achieving the business goal. Table 26 presents the SWOT analysis for the *Laundnet* and details the internal and external factors that can influence the successful introduction of the app in the market.

Table 26: SWOT analysis

Strengths (internal factors)	**Weaknesses** (internal factors)
– Free, user friendly and time-saving tool for users – Information/evaluation tool for users (ex. laundry score) – Management tool for owners (ex: store inflow) – Feedback tool of users' service satisfaction (ex: comments and reviews) – Potential profits generator from mobile advertising and partnerships (ex: banks) – Means of visibility for owners – Potentially expanded to other countries	– Need of wearing smartphone device for users – Subject to user informatic skills – Adaptation costs in SSLs (ex: cashpoint update for *Laundnet* code)
Opportunities (external factors)	**Threats** (external factors)
– Absence of similar apps in the market – Greater students' mobility and tourism – Increasing number of apps' users	– Increase of household laundry appliances – Tourism services offer integrating laundry services – Increase of rental vacancy rates – Decrease of tourism activities – Ageing population – Increase of multi-housing laundry industry

Chapter 7: Conclusions

Along this master dissertation, I have been tried to test-out the viability of *Laundnet*, a mobile app for serf-service laundry users, based on two assumptions: A1) SSL users experience waste of time problems due to lack of information in advance on the occupancy level of stores, and A2) *Laundnet* would mitigate the potential waiting time problem. However, the results of the survey carried out on a sample of 100 users of SSL services in the area of Lisbon are quite surprising and do not validate both premises in the same degree.

Although the majority of the respondents has confirmed the first assumption, as around 67% has waited at least once for a vacant machine and, from those, two thirds have waited 15 minutes or more, the second assumption is not completely confirmed: the waiting time variable is not as strongly and significantly tied to the probability of using the *Laundnet* app as originally expected. The great receptivity of *Laundnet*, demonstrated not only by the high average mean (8.09) and by the percentage of users (51%) who attribute the maximum score to the probability of use, is, in fact, mostly determined by its perceived utility. As demonstrated by the estimated model, users that consider the app a very useful tool are eight times more likely to use it than the ones that do not consider it useful at all. Simultaneously, the great recognition of utility is highly related to the average waiting time experience, the longer the average waiting time, the bigger the utility perceived by users. Around 66% of users who wait on average 15-30 minutes consider that *Laundnet* is a very useful app.

Other outcomes can be extracted from the evaluation of the results regarding the impact of other variables in the intention to use *Laundnet*. For instance, there is no correlation between the three satisfaction dimensions and the probability to use the app. Moreover, despite being positive, the association between the use of mobile apps and the intention to use the online service is not significant. This point brings us to other considerations about the factors behind the profile of a mobile user. It has been confirmed that the gender is not associated to the use of mobile apps, both female and male users present similar frequencies of use. The age group and the work status are strongly linked to the

use of mobile apps. The younger and employed costumers are the main users of mobile apps and have, subsequently, higher probability of using *Laundnet*.

Hence it is possible to deduct from all the relations announced and verified that the main target of this online service corresponds to the 18-45 years old employed SSL users, who use mobile apps, have had waiting time experiences in the past and consider that *Laundnet* is a very or moderately useful tool. Overall, the results of the questionnaire demonstrate that the idea of *Laundnet* is very appealing for the majority of individuals, attracting different users' profiles, even those who have not experienced waiting time problems. Besides the most important conclusions derived from the statistical methods applied to the questionnaire, there are other relevant reflections about the potential of the app and the legitimacy of its investment.

First of all, *Laundnet* benefits from the absence of similar apps in the market, turning it a unique tool, which does not face direct competition, and its model is easily expandable and adaptable to other countries.

Secondly, is integrated in an "immune business model" based on a basic need, the SSLs follow the global SSTs trends, making it likely to survive even in times of crisis. The present Portuguese economic and socio-cultural landscape is favorable to the investment of the app, not only because the business has been growing, but also because it serves an increasingly number of students, tourists and mobile app users in the country. Students match the main target of *Laundnet* and tourists and app users mean, respectively, a provisional yet very large segment and a promising market.

Thirdly, *Laundnet* is a helpful tool for both SSLs users and owners. Regarding the first, it is possible to infer that the app is an effective time-saving tool to avoid the waiting time experiences reported by most of the respondents. The reduction of waiting time experiences is achieved by the main purpose of the app, by allowing the pre-booking of laundry machines without the need of users displacement to the store, which obviously takes time, and becomes longer in case of no available machines. This aspect is particularly significant given the *acceleration societies* we live in (Rosa, 2003), and considering the INUT results already discussed, which assigns great importance to laundry, considering it a household burden that takes out time from leisure activities. Moreover, it is a feedback tool of users' service satisfaction through the reviews and

score features, turning the business more transparent and making SSL users' choices of one laundry over another more clear and substantiated.

For the SSL owners, *Laundnet* is a management tool that enables them to optimize the business, through the control of the influx in their store, as well as to be constantly updated about the users' reviews, adapting the business to the costumers' demands. Within the online world, this app will reach a bigger market, which increases the visibility and may lead to related virtual businesses, such as online advertising and partnerships that might have a positive impact on the profits.

Despite considering that the main two proposed goals have been accomplished, namely the testing of the viability of *Laundnet* and the presentation of its concept, general guidelines, designing features and functionalities, there is still room to improve this research in the future. The sample dimension was not as big as I would have desired, a more extensive dimension would have turned the results more accurate and allow a higher level of results generalization.

Furthermore, and although this dissertation was not focused on the development of the app, the financial and technological requirements involved in the implementation of *Laundnet* need to be deeply explored, as well as the SST processes implied in the pre-booking of laundry machines and production of a code through the app. For instance, the type and cost of material and software resources needed, the adaptation of cashpoints software and the user informatics skills. Thus, and upon confirmation of the viability of this online service, I would suggest for further research an in-depth analysis in the form of a business plan and the programming of *Laundnet.*

References

Accenture. 2015. *Growing the digital business: Spotlight on mobile apps*. Accenture.

Aguiar, N., & Teixeira, N. (2016, March 2). *Cinco gráficos que mostram a evolução do turismo em Portugal*. Retrieved May 27, 2017, from Jornal de Negócios: http://www.jornaldenegocios.pt/empresas/turismo---lazer/detalhe/cinco_graficos_que_mostram_a_evolucao_do_turismo_em_portugal

Arpal Group. 2015, March 19. *A Brief history of laundry (Part 2): Edward Beetham to the Industrial Age*. Retrieved May 17, 2017, from Arpal Group: http://www.thearpalgroupblog.com/a-brief-history-of-laundry-part-2-edward-beetham-to-the-industrial-age/

Bellezza, S., Keinan, A., & Paharia, N. 2016. Conspicuous consumption of time: When busyness and lack of leisure time become a status symbol. *Journal of Consumer Research*, pp. 44 (1): 118-138.

Binney, R. 2012. Better Housekeeping. In R. Binney, *Wise words and country ways* (p. 51). David & Charles.

Blair, A. 2010. *A new era for self-service.* Retrieved May 16, 2017, from Hospitality Technology: http://www.edgellcommunications.com/main/index. php? id=1248

Bradley, M. 2002, February 16. It all comes out in the wash: Looking harder at the Roman fullonica. *Journal of Roman Archaeology*, pp. 15: 20-44.

CML. 2011. *Demografia*. Retrieved June 14, 2017, from Câmara Municipal de Lisboa: http://www.cm-lisboa.pt/municipio/demografia

Coin Laundry Association. (n.d.). *Industry Overview Additional Information*. Retrieved May 18, 2017, from Coin Laundry Association: http://www.coinlaundry.org/investor-resources/additonalinfo

Costa, R. M. 2017, September 10. *Alojamento local dispara no Porto e abranda em Lisboa*. Retrieved June 3, 2017, from Público: https://www.publico.pt/2017/09/10/local/noticia/alojamento-local-dispara-no-porto-e-abranda-em-lisboa-1784787

De Feo, G., Antoniou, G., Fardin, H. F., El-Gohary, F., Zheng, X. Y., Reklaityte, I., et al. 2014. The historical development of sewers worldwide. *Sustainability*, pp. 6 (6): 3936-3974.

De Gisi, S., & De Feo, G. 2012, September 24. *Water and wastewater management in the treatment process of a Roman fullonica*. Retrieved April 17, 2017, from Slide Share: https://pt.slideshare.net/SabinoDeGisi/water-and-wastewater-management-in-the-treatment-process-of-a-roman-fullonica

Deutshes Museum. 2005, April. Geistliche mit Geistesblitzen. *K&T Musterseiten*, pp. 48-51.

Dutton, H. W., di Gennaro, C., & Hargrave, M. A. 2005. *The Internet in Britain. The Oxford Internet Survey (OxIS)*. United Kingdom: University of Oxford.

European Commission. 2014. *Erasmus. Facts, figures and trends. The European Union support for student and staff exchanges and university cooperation in 2012-2013*. Brussels: Unit B1 'Higher Education', Directorate-General for Education and Culture, European Commission.

Flohr, M. 2003, January. Fullones and Roman society: a reconsideration. *Journal of Roman Archaeology*, pp. 16: 447-450.

Flohr, M. 2013. ***The world of the fullo: Work, economy, and society in Roman Italy.*** Oxford University Press.

Fultz House Museum. (n.d.). A History on Laundry.

Gerivaz, S., & Soares, M. 2014, March 24. *Lavandarias à americana conquistam cada vez mais adeptos nas cidades* . Retrieved March 5, 2017, from Público: https://www.publico.pt/2014/03/24/local/noticia/lavandarias-a-americana-conquistam-cada-vez-mais-adeptos-nas-cidades-1629244

Google. 2016. Retrieved July 12, 2017, from Consumer Barometer: https://www.consumerbarometer.com/en/insights/?countryCode=PT

Google, K. T. 2017. *Google Consumer Barometer. The Internet in Numbers 2012-2016.*

Grene, D. 1988, January 15. *Herodotus: The history.* Retrieved April 12, 2017, from http://www.documentacatholicaomnia.eu/03d/-484_-430,_Herodotus,_The_History,_EN.pdf

Hilton, T., & Hughes, T. 2013. Co-production and self-service: The application of Service-Dominant Logic. ***Journal of Marketing Management,***, pp. 29: 861-881.

Hueter, J., & Swart, W. 1998. An Integrated Labor-Management System for Taco Bell. ***Interfaces***, pp. 28:75-91.

IBIS World. 2015, February. *81231 - Laundromats in the US.*

Instituto Nacional de Estatística. 2016. ***Estatísticas do turismo 2015***. Lisboa: Instituto Nacional de Estatística, I.P.

Jackson, A. 2017, April 13. *May 9, 1949: Britain's first launderette sets a revolution in motion*. Retrieved May 18, 2017, from BT: http://home.bt.com/news/on-this-day/may-9-1949-britains-first-launderette-sets-a-revolution-in-motion-11363980035442

Jackson, C. 2014, February. The future of laundry is here. A look at today's laundry room technology. ***Planet laundry magazine***, pp. 25: 25-26.

Kenyon, L. 1791. In L. Kenyon, ***Observations on the utility of patents and on the sentiment of lord Kenyon respecting that subject. Including free remarks on Mr. Beetham patent washing mills and hints for those who solicit for patents*** (pp. 30-45). Ridgway.

Kokkinoua, A., & Cranage, D. A. 2013. Using self-service technology to reduce customer waiting times. ***International Journal of Hospitality Management***, pp. 33: 435-445.

McDonald, J. 2011. ***An investor's guide to coin laundries***. Alliance Laundry Systems.

McLuhan, M. 2001. ***Understanding media: The extensions of man.*** Routledge.

NALI. (n.d.). *NALI's History*. Retrieved June 3, 2017, from The National Association of the Launderette Industry: http://www.nali.org.uk/about-us/NALI-history

Neves, C. 2015, October 12. *Lavandarias self-service: o negócio que emergiu da crise*. Retrieved March 18, 2017, from Diário de Notícias: https://www.dn.pt/portugal/interior/lavandarias-selfservice-o-negocio-que-emergiu-da-crise-4828812.html

Nguyen, T., & Nguyen, T. 2015. ***Feasibility analysis of laundry lounge in Vietnam, targeting students. Case: Start-up X, Ho Chi Minh, Vietnam***. Lahti University of Applied Sciences.

Nicholas, S. 2016, March 7. *Is this the end of launderette? A brief look at its history*. Retrieved March 15, 2017, from Express: http://www.express.co.uk/life-style/life/650312/End-launderette-brief-history

Nielsen. 2016. ***The dirt on cleaning. Home cleaning/laundry attitudes and trends around the world***. Nielsen.

Nutton, V. 2012, January. The seeds of disease: an explanation of contagion and infection from the Greeks to the Renaissance. *Medical History*, pp. 27 (1): 1–34.

Observador. 2016, May 16. *Crise e castigo. A longa estagnação da economia em Portugal*. Retrieved May 30, 2017, from Observador: http://observador.pt/especiais/crise-castigo-longa-estagnacao-da-economia-portugal/

Oh, H., Jeong, M., & Baloglu, S. 2014, June 16. Tourists' adoption of self-service technologies at resort hotels. *Journal of Business Research*, pp. 66 (6): 692-699.

Oliveira, I. T., Ramos, M., Ferreira, C., A., & Gaspar, S. 2015. Estudantes Estrangeiros em Portugal: Evolução e dinâmicas recentes (2005/6 a 2012/13). *Revista de Estudos Demográficos* , pp. 54: 39-55.

Oxford English Dictionary. 2006, 25 6. *The popularity of time unvailed*. Retrieved June 18, 2017, from Reported in BBC News: https://en.oxforddictionaries.com/explore/what-can-corpus-tell-us-about-language

Perista, H., Cardoso, A., Brázia, A., Abrantes, M., Perista, P., & Quintal, E. 2016. *Os Usos do Tempos dos Homens e das Mulheres em Portugal*. Lisboa: CESIS.

Reis, E. 2001. *Estatística Multivariada Aplicada*. Lisboa: Edições Silabo.

Roberts, S. L. 2014, September 24. *Demanding justice for women and children abused by Irish nuns*. Retrieved June 3, 2017, from BBC News Ireland: http://www.bbc.com/news/magazine-29307705

Robinson, P. J., & Godbey, G. 2000. *Time for life. The surprising ways Americans use their time*. United States of America: The Pennsylvania State University.

Rosa, H. 2003. *Social Acceleration: Ethical and political consequences of a desynchronized high-speed society*. Constellations.

Ruel, E., Wagner, W., & Gillespie, B. 2016. *The practice of survey research. Theory and application*. Sage Publications.

Shehan, L. C., & Moras, B. A. 2006. Deconstructing laundry: Gendered technologies and the reluctant redesign of household labor. *Michigan Family Review*, pp. 11 (1): 39-54.

Sherrow, V. 2001. Baths. Changing attitudes. In V. Sherrow, *For appearance' sake. The historical encyclopedia of good looks, beauty and grooming* (p. 37). Oryx Press.

Silva, S. 2016, January 4. *Estudantes Estrangeiros em Portugal aumentaram 74% nos últimos cinco anos*. Retrieved March 18, 2017, from Público: https://www.publico.pt/2016/01/04/sociedade/noticia/estudantes-estrangeiros-em-portugal-aumentaram-74-nos-ultimos-cinco-anos-1719016

SMI. (n.d.). Retrieved February 28, 2017, from http://smi.ine.pt/Categoria/Detalhes/281197?modal=1

Smith, V. 2007. Civil Cleanliness. In V. Smith, *Clean. A history of personal hygiene and purity* (pp. 224-263). United States of America: Oxford Univeristy Press.

Soares, R., & Silva, A. R. 2016, June 5. *Oferta de casas para arrendar caiu 33% em cinco anos e rendas dispararam*. Retrieved June 3, 2017, from Público: https://www.publico.pt/2016/06/05/economia/noticia/oferta-de-casas-para-arrendar-caiu-33-em-cinco-anos-e-rendas-dispararam-1734086

Statista. 2017. Retrieved from Share of households with internet access in Portugal from 2005 to 2016: https://www.statista.com/statistics/377756/household-internet-access-in-portugal/

Statista. 2017. *Percentage of global population accessing the internet from 2005 to 2017, by market maturity*. Retrieved April 3, 2017, from

https://www.statista.com/statistics/209096/share-of-internet-users-in-the-total-world-population-since-2006/

Strachan, J. 2008. A "department of literature": Advertising in the Romantic period. In J. Strachan, *Advertising and Satirical Culture in the Romantic period* (pp. 48-49). Cambridge University Press.

Tulchinsky, T., & Varavikova, E. 2000. A Hstory of Public Health. In T. Tulchinsky, & E. Varavikova, *The New Public Health* (pp. 1-32). Academic Press.

Vigarello, G. 2008. From water for pleasure to water as threat. In G. Vigarello, *Concepts of cleanliness. Changing attitudes in France since the middle ages* (pp. 1- 10). Cambridge University Press.

Virilio, P. 1995. *The Art of the Motor*. Minneapolis: University of Minnesota Press.

Virilio, P. 2000. *Open Sky*. London: Verso.

Wajcman, J. 2008. Life in the fast lane? Towards a sociology of technology and time. *The British Journal of Sociology*, pp. 59 (1): 59-77.

Watson, S. 2014. Mundane objects in the city: laundry practices and the making and remaking of public/private sociality and space in London and New York. *Urban Studies*, pp. 1-28.

Wecker, E. C. 2015. Reclaiming magdalenism or washing away sin: Magdalen laundries and the rhetorics of feminine silence. *Women's Studies*, pp. 44: 264-279.

Zambujo, P., Jorge, P., & Moreira, L. 2015, October 25. *Aumentou em Portugal o número das lavandarias self-service*. Retrieved March 18, 2017, from RTP Notícias: https://www.rtp.pt/noticias/pais/aumentou-em-portugal-o-numero-das-lavandarias-self-service_v868823

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Appendix A: Questionnaire (English version)

<u>Survey to the self-service laundry users</u>

Questionnaire_____

This questionnaire is part of an investigation to elaborate a Master dissertation in International Management at ISCTE Business School. Its main purpose is to collect information on potential waste of time problems faced by self-service laundry users and to inquire their opinion on related matters.

The expected time to answer this survey is only 5 minutes. Your participation is very important to bring to fruition this master dissertation. All your answers are anonymous and confidential. Thank you for your availability!

Q1. Please indicate your gender

Female ☐
Male ☐

Q2. What is your age?

Under 18 ☐
18-27 ☐
28-45 ☐
46-65 ☐
Over 65 ☐

Q3. What is your occupational status?

Student ☐
Employed ☐
Unemployed ☐
Retired ☐

Q4. How often do you use self-service laundries?

Without regularity ☐
Less than 12 times per year ☐
Less than 4 times per month ☐
Once a week/every week ☐
More than once a week ☐

Q5. When do you mostly use the self-service laundry? Choose one or more options

Morning (7am-12pm) ☐
Afternoon (1pm-7pm) ☐
Evening (after 7pm) ☐

Q6. Which is /are the day(s) of the week you mostly use the self-service laundry? Choose one or more options

Monday ☐
Tuesday ☐
Wednesday ☐
Thursday ☐
Friday ☐
Saturday ☐
Sunday ☐

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Q7. For the following aspects, indicate your degree of satisfaction using the next scale:

1 – Completely dissatisfied

2 – Dissatisfied

3 – Neither satisfied nor dissatisfied

4 – Satisfied

5 – Completely satisfied

Washing quality ☐

Drying quality ☐

Washing duration ☐

Drying duration ☐

Soap quality ☐

Number of machines available ☐

Waiting time until a machine is available ☐

Price of the washing ☐

Price of the drying ☐

Q8. How do you usually do your payment?

With cash ☐

With client card ☐

Q9. Have you ever had to wait for vacant machines?

Yes ☐

No ☐ (Skip to Q13)

Q10. If you have answered "Yes", how often does it occur?

Always ☐

More than half of the times ☐

Less than half of time ☐

Rarely ☐

Q11. When all machines are occupied, what do you normally do?

Wait until one is available ☐

Go to another laundry ☐

Choose an alternative service ☐

Give up the service ☐

Q12. How much time on average do you wait? Choose on or more options

Less than 15 min ☐

15-30 min ☐

More than 30 min ☐

Q13. Are you a user of mobile applications? (For example, email, games or other mobile services)

Yes ☐

No ☐

Q14. How useful do you consider a mobile app that allows the pre-book of laundry machines online?

Very useful ☐

Moderately useful ☐

Not at all ☐

Q15. On a 0-10 scale, what is the probability of using an app of that type?

(0 = not probable at all ; 10 = very probable

☐

Date:___/__/___
Period:_____
Laundry:____

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Inquérito aos utilizadores de lavandarias self-service

Questionário____

Este questionário faz parte de uma investigação para elaborar uma tese de mestrado em Gestão Internacional do ISCTE Business School. O objectivo principal do estudo é recolher informação sobre potenciais problemas associados à perda de tempo por parte dos utilizadores de lavandarias self-service, bem como saber a sua opinião sobre outros assuntos relacionados com o serviço

O tempo previsto para responder ao questionário é apenas de 5 minutos. A sua participação é muito importante para levar a bom termo esta tese de mestrado. Todas as suas respostas são anónimas e confidenciais. Obrigada pela sua disponibilidade!

P1. Por favor, indique o seu género

Feminino ☐
Masculino ☐

P2. Que idade tem?

Menos de 18 ☐
18-27 ☐
28-45 ☐
46-65 ☐
Mais de 65 ☐

P3. Qual é a sua situação perante o trabalho?

Estudante ☐
Empregado ☐
Desempregado ☐
Reformado ☐

P4. Quão frequentemente usa lavandarias self-service?

Sem regularidade/esporadicamente ☐
Menos de 12 vezes por ano ☐
Menos de 4 vezes por mês ☐
1 vez por semana /todas as semanas ☐
Mais do que 1 vez por semana ☐

P5. Qual o período do dia em que mais usa lavandarias self-service? Escolha uma ou mais categorias de resposta

De manhã (7h-12h) ☐
À tarde (13h-19h) ☐
À noite (após as 19h) ☐

P6. Em que dia(s) da semana costuma utilizar as lavandarias self-service? Escolha uma ou mais categorias de resposta

2ª feira ☐
3ª feira ☐
4ª feira ☐
5ª feira ☐
6ª feira ☐
Sábado ☐
Domingo ☐

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P7. Relativamente aos aspectos a seguir listados, indique o seu grau de satisfação, utilizando a seguinte escala:

1 – Completamente insatisfeito

2 – Insatisfeito

3 – Nem satisfeito/nem insatisfeito

4 – Satisfeito

5 – Completamente satisfeito

Qualidade da lavagem ☐

Qualidade da secagem ☐

Duração da lavagem ☐

Duração da secagem ☐

Qualidade do detergente ☐

Número de máquinas disponíveis ☐

Tempo de espera até ter máquina

disponível ☐

Preço da lavagem ☐

Preço da secagem ☐

P8. Como costuma efectuar o pagamento?

Com dinheiro ☐

Com cartão de cliente ☐

P9. Alguma vez teve que esperar por máquinas vagas?

Sim ☐

Não ☐ (Passe para a P13)

P10. Se respondeu "Sim", quão frequentemente isso acontece?

Sempre ☐

Mais de metade das vezes ☐

Menos de metade das vezes ☐

Quase nunca/raramente ☐

P11. Quando todas as máquinas estão ocupadas, o que costuma fazer?

Esperar até que uma esteja vaga ☐

Ir a outra lavandaria self-service ☐

Escolher um serviço alternativo ☐

Desistir do serviço ☐

P12. Quanto tempo, em média, teve de esperar? Escolha uma ou mais categorias de resposta

Menos 15 min ☐

15-30 min ☐

Mais de 30 min ☐

P13. É utilizador de aplicações de telemóvel? (Por exemplo, email, jogos ou outros serviços de telemóvel)

Sim ☐

Não ☐

P14. Quão útil considera uma aplicação para telemóvel que permita fazer a pré-reserva de máquinas de lavandaria online?

Muito útil ☐

Moderadamente útil ☐

Nada útil ☐

P15. Numa escala de 0-10, qual a probabilidade de vir a utilizar uma aplicação desse tipo?

(0 é nada provável até 10 é muito provável)

☐

Data:___/__/___
Período:_____
Lavandaria:____

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Appendix B: List of SSLs in Lisbon (Concelho)

Name	Address	Opening year
A Lavadeira Portuguesa	R. Morais Soares 98	2014
Água e Sabão	Av. Grão Vasco, 36 B	2016
Alfazema do Patéo	R. Sá de Miranda 2C	2016
Best Family	Passeio Júlio Verne	2016
Bubblewash	R. Cidade de Cádiz nº2	2016
Cheir'a Lisboa	R. São Boaventura 42	2015
Clean Bubbles (2 lavandarias)	1. Av. Sacadura Cabral 27B	2016
	2. R. Engenheiro Quartin Graça,8ª	2017
Conversas de Fadas	Av. Maria Helena Vieira da Silva 31	2016
Cotton Club	R. Andrade, 15 - 15ª	2012
Cuida Bem	Passeio das Garças, n4 A	2016
Espiral d'água	R. Adriano Correio de Oliveira	2011
Glutões	R. Actriz Palmira Bastos nº 14 loja D	2014
Ideal	R. São Lázaro 205	2015
Impec	R. Major Neutel de Abreu	2017
Jardins da Roupa (14 lavandarias)	1. R. Helena Vaz da Silva 2A	2014
	2. Av. Sérgio Vieira de Mello nº 19 B	2016
	3. R. dos Cavaleiros 68	2014
	4. R. Poço dos Negros 175	2014
	5. R. Prior do Crato 116	2015
	6. Centro Comercial Bela Vista	2015
	7. R. da Penha de França Nº 215	2016
	8. R. Professor Mira Fernandes	2016
	9. R. Senhora da Glória nº 51 - 51 A	2016
	10. Calçada de São Vicente nº 18	2016
	11. R. Cavaleiro de Oliveira 41 B	2016
	12. R. Vale de Santo António	2016
	13. R. Barão Sabrosa	2016
	14. R. do Telhal	2016
L3	R. João Ortigão Ramos	2015

La Wash (3 lavandarias)	1. R. Nova da Piedade 49	2015
	2. Av. João Crisóstomo, 67	2015
	3. R. Mário Dionísio	2016
Laundry 24	R. Poeta Bocage 18-E	2014
Lava Neve	R. da Alegria 37/39	1987
Lavadeira do Aqueduto	R. dos prazeres n 7	2017
Lavadeira do Bairro	R. José Ricardo 36	2014
Lavadouro	Av. Coronel Eduardo Galhardo, 3E	2016
Lavamais (15 lavandarias)	1. R. Luís de Camões 26	2014
	2. Av. Almirante Reis, nº74 B	2013
	3. R. José D'Esaguy 9ª	2015
	4. R. Ladislau Patrício 4ª	2015
	5. Travessa da Memória, 49ª	2016
	6. R. de Infantaria 16, 49	2013
	7. Av. Conde Valbom, 121	2013
	8. Av. General Roçadas, 34B;	2012
	9. R. Amélia Rey Colaço, 1A	2016
	10. R. Santana à Lapa, 158 A	2015
	11. R. Coelho da Rocha, Nº 75A	2016
	12. Av. do Uruguai	2014
	13. Largo D. Estefânia	2016
	14. R. Cidade de Bolama	2016
	15. R. Campolide , 97	2014
Lavàmil	R. da Madalena	2013
Lavanda-ria	Av. Conselheiro Barjona de Freitas 5C	2017
Lavandaria do Bairro	R. Fernando Farinha	2014
LavCare	R. Padre Francisco Álvares, n.º 12A	2017
Maria Lavadeira	Av. Duque de Ávila 8D	2015
Millevantagens	R. Basílio Teles N.º 26	2014
Speed Queen (5 lavandarias)	1. R. Beneficência, 62	2014
	2. Av. Infante Santo 68	2016
	3. R. Palmira, 66 A/B	2016
	4. R. José Pinheiro de Melo 61ª	2016
	5. Rua de Alcântara 38 A	2014
Tanqmatic	R. Senhora do Monte 5ª	2016
Vem e lava	R. do Conde de Redondo 53ª	2015
Wash and go	R. Luz Soriano nº 18	2015
Washstation (6 lavandarias)	1. R. dos Remédios 115	2015
	2. R. Armindo Rodrigues 26 A	2016
	3. Estr. de Benfica 450	2015
	4. R. das Pedreiras 20B	2016
	5. R. Prof. Mark Athias, Lt. 7 - 3C	2014
	6. R. Bernardino Ribeiro, nº 79	2015

Appendix C: List of the SSLs for scope of analysis

Name	Address	Laundry number
Millevantagens	R. Basílio Teles N.º 26	1
Lavamais	Avenida do Uruguai	2
Água e Sabão	Av. Grão Vasco, 36 B	3
Jardins da Roupa	R. Prior do Crato 116	4
Lavamais	Av. Almirante Reis, nº74 B	5
Bubblewash	R. Cidade de Cadiz nº2	6
Jardins da Roupa	R. Cavaleiro de Oliveira 41 B	7
Cheir'a Lisboa	R. São Boaventura 42	8
Lavamais	R. de Infantaria 16, 49	9
Speed Queen	R. Beneficiência, 62	10
Washstation	Estr. de Benfica 450	11
Washstation	R. Armindo Rodrigues 26A	12
L3	R. João Ortigão Ramos	13
Lavamais	Av. General Roçadas, 34B	14
Lavadouro	Av. Coronel Eduardo Galhardo, 3E	15
Jardins da Roupa	R. dos Cavaleiros 68	16
Wash & Dry	R. Madalena	17
Wash and go	R. Luz Soriano nº 18	18
Blue Bubble	Av. Sacadura Cabral 27B	19
Lavamais	R. José D'Esaguy 9ª	20
Lavamais	R. Coelho da Rocha, Nº 75A	21
Ideal	R. São Lázaro 205	22
Jardins da Roupa	R. da Penha de França Nº 215	23
Lavadeira do Bairro	R. José Ricardo 36	24
Speed Queen	Av. Infante Santo 68	25

Appendix D: characteristics and features of the SSLs

Laundry characteristics/features

Laundry	Nº washing machines	Nº drying machines	Drying cycles	Brand	Shop schedule	Add. Services/ Features
Millevantagens	2 x 8kg 1 x 16kg	2 x 16kg	15 min.	Miele	7:30 am – 10 pm	Free Wi-Fi; kids area; ironing; sewing; magazines
Lavamais	*Av. do Uruguai #2*					
	1 x 8kg 2 x 13 kg 1 x 16kg	3 x 16kg	18 min.	Miele	8 am – 10 pm	Free Wi-Fi; TV
	Av. Almirante Reis #5					
	2x 8kg 2 x 12kg 1 x 16kg	3 x 16kg	18 min.	Miele	8 am – 10 pm	Free Wi-Fi; magazines
	R. de Infantaria #9					
	1 x 8kg 3 x 13kg 1 x 16kg	4 x 17kg	18. min	Miele	8 am – 10 pm	Free Wi-Fi; kids area
	Av. General Roçadas #14					
	1 x 8kg 1 x 13kg 1 x 16kg	3 x 16kg	18 min.	Miele	8 am – 10 pm	Free Wi-Fi
	R. José D'Esaguy # 20					
	2 x 9 kg 1 x 14kg	3 x 17kg	18 min.	Girbau	8 am – 10 pm	Free Wi-Fi
	R. Coelho da Rocha #21					
	2 x 9kg 1x 14kg	2 x 17kg	18 min.	Girbau	8 am – 10 pm	Free Wi-Fi
Água e Sabão	2 x 8kg 1 x 16kg	2 x 16kg	18 min.	Miele	8 am – 10 pm (on weekends 10 pm – 10 pm)	Free Wi-Fi; TV; ironing; sewing; kids area
Jardins da Roupa	*R. Prior do Crato #4*					
	1 x 9kg 1 x 12kg 1 x 16kg	2 x 17kg	15 min.	Girbau Miele	8 am – 10 pm	Free Wi-Fi; music; ironing
	R. Cavaleiro de Oliveira #7					
	1 x 9kg 1 x 12kg 1 x 16kg	3 x 17kg	18 min.	Girbau	8 am – 10 pm	No additional services
	R. dos Cavaleiros #16					
	1 x 8kg 2 x 12 kg 1 x 16kg	3 x 17kg	18 min.	Girbau Miele	8 am – 10 pm	Free Wi-Fi; ironing
	R. da Penha de França #23					
	1 x 8kg 1 x 12 kg 1 x 16 kg	2 x 17kg	18 min.	Miele	8 am – 10 pm	Free Wi-Fi; ironing

Bubblewash	1 x 9kg 1 x 11kg 1 x 16kg	4 x 16kg	10 min.	Primus	9 am – 10 pm	Free Wi-Fi; TV; ironing; magazines; terrace
Cheir'a lisboa	2 x 8kg 2 x 12kg	3 x 16kg	18 min.	Krebe - Tippo	8am – 12 am	Free Wi-Fi; ironing Books
Speed queen	R. Beneficiência #10					
	2 x 9kg 1 x 14kg 2 x 20kg	2 x 14kg 2 x 25kg	30 min.	Speed Queen	7 am – 10 pm	Detergent machine (it's not included)
	Av. Infante Santo #25					
	2 x 9kg 2 x 14kg 1 x 20kg	2 x 14kg 2 x 25kg	18 min.	Speed Queen	8 am – 11 pm	Free Wi-Fi; ironing; magazines
Washstation	Estr. de Benfica #11					
	1 x 8kg 2 x 12 kg 2 x 19kg	4 x 19kg	12 min.	Krebe	8 am – 10 pm	Free Wi-Fi; TV
	R. Armindo Rodrigues #12					
	2 x 12kg 1 x 19kg	4 x 19kg	12 min.	Krebbe-Tippo	8 am – 10 pm	Free Wi-Fi; TV; kids area; magazines, books, lockers
L3	1 x 8kg 1 x 13kg 1 x 16kg	3 x 16kg	18 min.	Miele	8 am – 11 pm	Free Wi-Fi; TV; ironing; magazines
Lavadouro	2 x 9 kg 1 x 14kg	2 x 17kg	18 min, .	Girbau	8 am – 10 pm	Free Wi-Fi; music; lockers
Wash & Dry 17	3 x 8kg 2 x 17kg	2 x 17kg	10 min.	Girbau	8 am – 8 pm	Free Wi-Fi; TV; ironing; vending machine; magazines; dry-cleaning; music
Wash and Go	3 x 8kg 1 x 11kg 1 x 16kg	3 x 16kg	18 min.	Miele	8 am – 12 pm	Free Wi-Fi
Clean Bubbles	1 x 10kg 1 x 13kg 1 x 16kg	3 x 17kg	15 min.	Electrolux	7 am – 12 pm	Free Wi-Fi; TV
Ideal	2 x 8kg 1 x 16kg	2 x 16kg	18 min.	Miele	8 am – 10 pm	Free Wi-Fi; vending machine
Lavadeira do Bairro	2 x 9kg 1 x 20 kg	3 x 17kg	14 min.	Electrolux	8:30 am – 22:30 pm	Free wi-fi; TV; magazines

Appendix E: Price per washing/drying machine capacity

Price per washing/drying machine capacity

Laundry	Washing capacity										Drying capacity				
	8kg	9kg	10kg	11kg	12kg	13kg	14kg	16kg	19kg	20kg	14kg	16kg	17kg	19kg	25kg
Millevantagens	4,50€							9,70€			1,80€				
	3,90€*							9,20€*			1,50€*				
Lavamais	Avenida do Uruguai/Avenida Almirante Reis														
	4,00€				6,50€			9,00€				2,00€			
	3,80€*				5,90€*			8,70€*				1,70€*			
	R. de infantaria														
	4,00€					6,00€		8,00€					2,00€		
	Av. General Roçadas														
	4,00€					6,50€		9,00€				2,00€			
	3,80€*					5,90€*		8,70€*				1,70€*			
	Rua José d'Esaguy														
		5,00€					8,00€						2,00€		
		4,70€*					7,50€*						1,70€*		
	R. Coelho da Rocha														
		5,00€					8,00€						2€		
		4,70€*					7,50€*						1,70€*		
Água e Sabão	4,00€							9,00€				1,80€			
	3,49€*							8,49€*				1,60€*			
Jardins da Roupa	R. Prior do Crato														
	4,00				5,00			7,00					2,00€		
	3,80*				4,70*			6,50*					1,70€*		
	R. Cavaleiro de Oliveira														
	3,80€				4,20€			7,00€					1,80€		
	3,50€*				3,80€*			6,50€*					1,60€*		
	R. dos Cavaleiros/Rua Penha de França														
	4,00€				5,00€			8,00€					2,00€		
	3,80€*				4,70€*			7,50€*					1,70€*		

*with client card

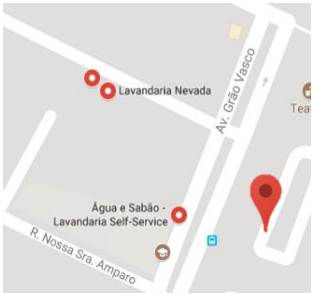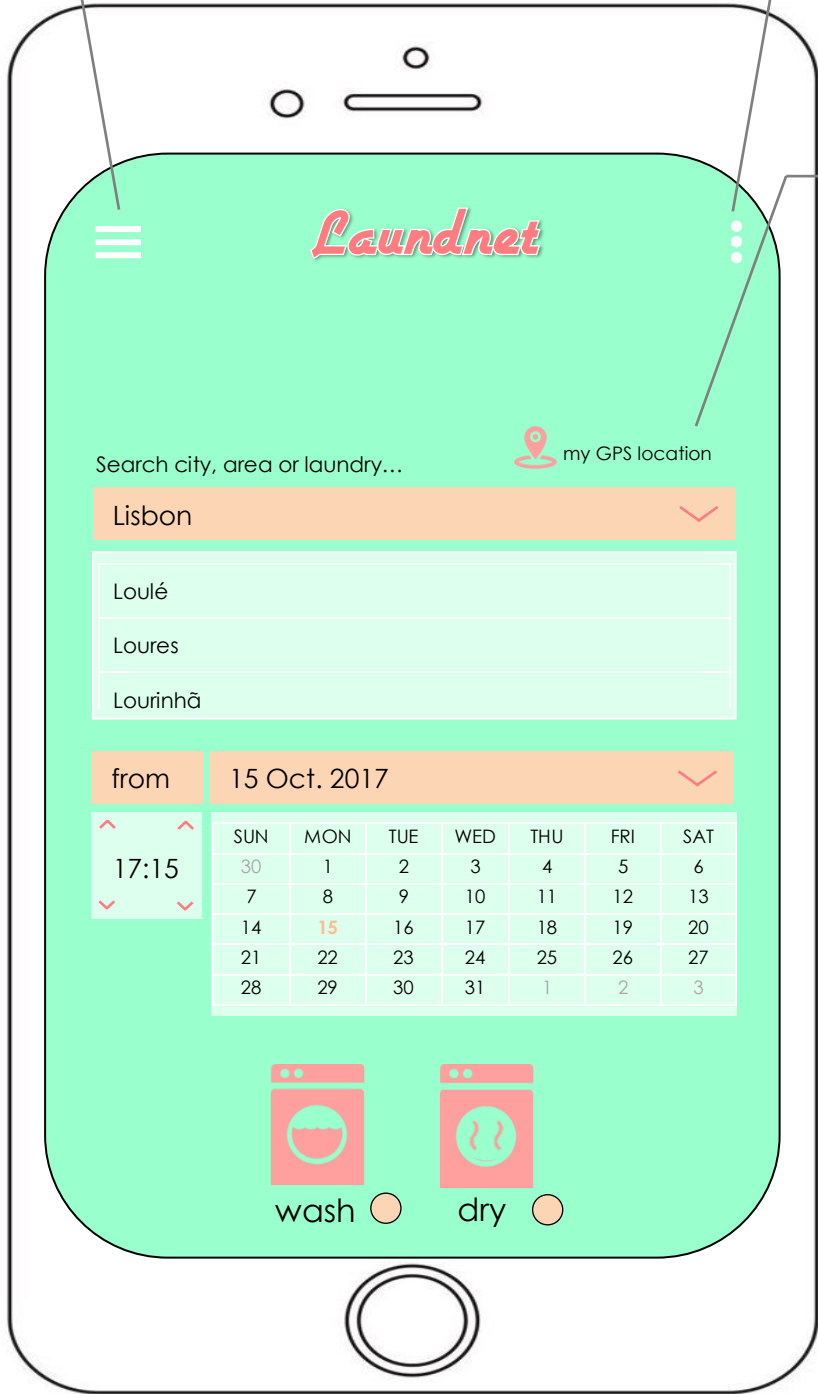| Laundry	Washing capacity										Drying capacity				
	8kg	9kg	10kg	11kg	12kg	13kg	14kg	16kg	19kg	20kg	14kg	16kg	17kg	19kg	25kg
Bubblewash		4,50€			6,50€								1,00€		
		4,00€*			6,00€*								1,00€*		
Cheir'a lisboa	4.50€				7,50€			9,50€				2,00€			
	3,50€				5,50€*			7,50€*				1,50€			
Speed Queen	R. Beneficiência														
		4,00€					5,50€			7,50€	4,00€				5,00€
		3,50€*					5,00€*			6,50€*	3,50€*				4,50€*
	Av. Infante Santo														
		4,00€					6,50€			9,00€	2,00€				2,50€
		3,50€*					6,00€*			8,50€	1,70€*				2,25€*
Washstation	Estr. de Benfica														
	4,00€				6,50€									1,50€	
	3,50€*				6,00€*									1,20€*	
	R. Armindo Rodrigues														
					6,50€				9,50€					1,50€	
					6,00€*				9,00€*					1,20€*	
L3	4,00€		6,00€			6,50€		9,50€				2,00€			
	4,50€*		5,50€*			6,00€*		9,00€*				1,70€*			
Lavadouro		4,20€					7,20€						2,00€		
		3,90€*					6,90€*						1,70€*		
Wash & Dry	4,00€							9,00€					1,00€		
Wash and go	4,00€		6,00€					9,00€		9,50€		2,00€			
	3,50€*		5,50€*					8,50€*		9,00€*		1,50€*			
Clean bubbles			4,70€			6,80€		8,50€				1,70€			
			4,30€*			6,40€*		8,00€*				1,50€*			
Ideal	4,00€							9,00€				2,00€			
	3,80€*							8,70€*				1,80€*			
Lavadeira do Bairro		4,00€								8,50€			1,50€		

*with client card

Appendix E: Steps to use *Laundnet*

Step 1: Create a user account

Step 2: Search a laundry
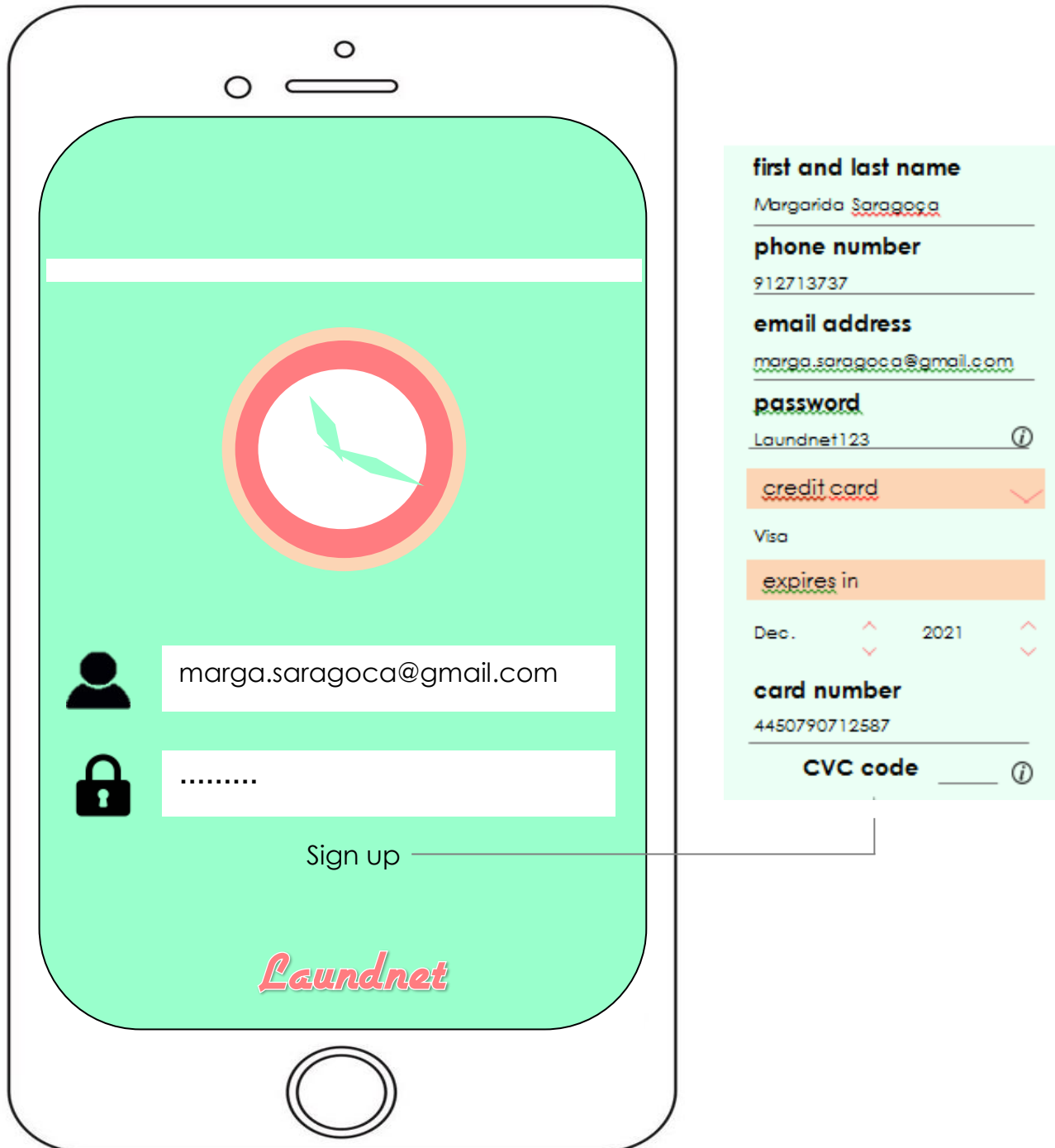
language

currency

terms and
conditions

edit user info

create account

my bookings

my favorites

write a review

add laundry

settings

help center

Laundnet

my GPS location

Search city, area or laundry...

Lisbon

Loulé

Loures

Lourinhã

from	15 Oct. 2017	

	SUN	MON	TUE	WED	THU	FRI	SAT
17:15	30	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3

wash   dry

Step 3: Sort and filter results

Step 4: Book

Step 5: Pay

Step 6: Confirmation and user code