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**Designing Pharmaceutical Services Using the Multilevel Service
Design Methodology**

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Dissertação de Mestrado

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To those who always stood by me.

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Abstract

This study focuses on characterizing the existing service provision within Portuguese community pharmacies in an insightful and holistic manner while attempting to categorize the main drivers involved in service experience. In order to achieve such, a Multilevel Service Design (MSD) was implemented throughout the dissertation which provided service design models able to identify the several components of service concept, service system and service encounter.

Firstly and foremost, a set of semi-structured qualitative interviews was performed within the health centers and hospitals of Oporto and Lisbon with the intent of gathering customer perspectives regarding their community pharmacies experiences along with factors that directly impacted their satisfaction.

Afterwards, grounded on the information collected from the interviewees and through the usage of the MSD methodology, the existing service provision was modeled in a detailed manner, allowing a better understanding of the current community pharmacy service offering. By studying the existing (AS-IS) service models and analyzing the data gathered in the interviews, it was possible to recognize flaws within the present scenario along with underused service interfaces and resources.

Subsequently, and yet again through the MSD, this study presents service proposals focused on acknowledging the different customer perspectives and needs within the community pharmacy setting. The artifact exhibited within this document represents an online platform which would allow the implementation of an ePharmacare service, enhancing the access to pharmaceutical care, and a home delivery service, improving the efficiency associated with the provision of pharmaceutical drugs and other products.

Upon presenting the proposed service models for the community pharmacies, a focus group is performed with health professionals, having the purpose of evaluating the services and their interaction within the National Healthcare System and other stakeholders, thus allowing a successful integration of services.

This dissertation then concludes, expressing the importance of a customer-driven design within services paired with suitable solutions able of taking advantage of existing resources and know-how to improve the access to pharmaceutical services.

Table of Contents

1	Introduction.....	1
1.1	The ePharmacare Project	1
1.2	Design Science Research methodology.....	1
1.3	Dissertation Project	2
2	Literature Review	3
2.1	Service Design	3
2.2	Technology in Service Provision	5
2.3	Pharmaceutical Services.....	6
2.4	Multi-interface Service Design.....	7
2.5	The Service Experience Blueprint	8
3	Research Methodology	9
3.1	Qualitative Research	9
3.2	Research Methods on Health and Health Services	11
3.3	Computer-Assisted Qualitative Data Analysis Software	11
3.4	Interviewing	12
3.5	Data Analysis	13
3.6	Focus Group	14
4	Analyzing the Customer Journey.	15
4.1	Defining categories	15
4.2	Processes	16
4.3	Interfaces	18
4.4	Services	19
4.4.1	Customer Value Constellation	21
4.4.2	Service System Architecture.....	23
4.4.3	Service System Navigation	24
4.5	Factors involved in pharmacy selection.....	24
4.6	Factors involved in service failures	26
4.7	Desired outcomes	28
5	New Service Design	30
5.1	ePharmacare service	31
5.1.1	Customer Value Experience	32
5.1.2	Customer Value Constellation	32
5.1.3	Service Experience.....	33
5.1.4	Service System Architecture.....	34
5.1.5	Service System Navigation	34
5.1.6	Service Encounter Experience.....	34
5.1.7	Service Experience Blueprint.....	34
5.2	Home delivery service	40
5.2.1	Customer Value Experience	40
5.2.2	Customer Value Constellation	40
5.2.3	Service Experience.....	41
5.2.4	Service System Architecture.....	42
5.2.5	Service System Navigation	42

5.2.6	Service Encounter Experience.....	42
5.2.7	Service Experience Blueprint.....	42
6	Discussion	48
7	Conclusions.....	50
	References	51
	Appendix A: Interview script.	55
	Appendix B: Scheme of models used throughout the MSD methodology.	56
	Appendix C: Sample socio-demographic information.	57
	Appendix D: Service System Navigation for the physical store interface of the ePharmicare service.	58
	Appendix E: Service Encounter Experience for the registration stage within the ePharmicare service.	59
	Appendix F: Service Encounter Experience for the remote physician consultation within the ePharmicare service.	60
	Appendix G: Service Encounter Experience for the provision of pharmaceutical drugs within the ePharmicare service.	61
	Appendix H: Service Experience Blueprint for the registration stage within the ePharmicare service (physical store interface).....	62
	Appendix I: Service Experience Blueprint for the disease management stage within the ePharmicare service (physical store interface).	63
	Appendix J: Service Experience Blueprint for the remote physician consultation stage within the ePharmicare service (physical store interface).	64
	Appendix K: Service Experience Blueprint for the provision of pharmaceutical drugs stage within the ePharmicare service (physical store interface).....	65
	Appendix L: Service System Navigation for the telephone interface of the home delivery service.	66
	Appendix M: Service Encounter Experience for the registration stage within the home delivery service.	67
	Appendix N: Service Encounter Experience for the delivery stage within the home delivery service.	68
	Appendix O: Service Experience Blueprint for the registration stage within the home delivery service (physical store interface).....	69
	Appendix P: Service Experience Blueprint for the delivery stage within the home delivery service.	70

1 Introduction

1.1 The ePharmacare Project

The ePharmacare project is an ongoing research, introduced in January of 2012, supported by Fundação para a Ciência e Tecnologia (FCT) under the number PTDC/CCI-CIN/122690/2010, and focuses on estimating the health gains from integration of pharmaceutical services. This project is taking place in the international health department within the Instituto de Higiene e Medicina Tropical (IHMT).

The core scope of this project is to assess the benefits added through a wider usage of Information Technology (IT) within Portuguese community pharmacies while developing ehealth services able of increasing customer satisfaction. To this point, an online survey and an observational study were performed in an attempt to characterize the presence of IT, the pattern of service provision along with the economical and clinical value of pharmaceutical services to customers.

Furthermore, the ePharmacare project also endorses the need of rethinking the current community pharmacy business model, enhancing it both in terms of profitability and service quality. From this paradigm the usage of technology may answer the documented need for an easier access to healthcare while being an important contribution to an effective chronic diseases' management (Lapão, Gregório et al. 2013).

1.2 Design Science Research methodology

In order to support the development of the ePharmacare project, a Design Science Research Methodology (DSRM) was carried out, serving as a guideline throughout the several science research phases. DSRM is a research method established for the production and presentation of design research within the Information Systems (IS) field of expertise.

Firstly and foremost, the design component within science research represents the act that generates an explicitly applicable solution to a problem, which can be considered as a research paradigm in several disciplines, such as engineering. Due to the incremental nature of problem solution within the engineering academic field, design is considered as a valid and valuable research methodology while supporting an IS approach (Peppers, Tuunanen et al. 2008). The DSRM is grounded on 6 activities which intend to create and evaluate IT artifacts capable of solving identified organizational issues (Hevner, March et al. 2004).

The first activity of DSRM focuses on the identification of an impactful problem along with the motivation that justifies the value of a solution. Resources needed for this activity involve an in-depth knowledge of the state of the problem and the importance of a solution. Secondly, it's vital to define the objectives needed for a solution development while characterizing what is possible and feasible. The required resources include the evolution of related problems along with the assessment of current solutions. The third phase aims at transforming the knowledge collected and proceed to the design and development of an artifact. Then, it's possible to demonstrate the use of the artifact to solve several known instances of the problem. The evaluation phase follows the demonstration one and highlights the performance of the artifact in solving the identified problem. At the end of this activity, researchers assess whether to iterate back the design and development phase or to continue on to the final phase.

Finally, when all the requirements are met, it's possible to communicate the capabilities imbued within the artifact through scholarly research publications.

1.3 Dissertation Project

In a joint effort with the ongoing ePharmacare project, this study proposes a customer-driven approach to new service design within the Portuguese community pharmacies setting. To accomplish this, the Multilevel Service Design (MSD) methodology (Patrício, Fisk et al. 2011) was implemented to define both the current service provision as well as the proposed services derived from this dissertation. The MSD also enriched the service design process with a holistic approach of the pharmaceutical service offering while accurately describing services interactions within the National Healthcare System.

Developed in the design and development phase of the Design Science Research method, this document aims at characterizing the existing service provision within community pharmacies while proposing new service concepts able to enhance the service offering while improving overall customer satisfaction. In order to do such, a set of semi-structured interviews were performed within health centers and hospitals of Oporto and Lisbon targeting citizens from several age groups that experienced a community pharmacy visit at least once every three months. The purpose of these interviews focused on acknowledging the existing activities within service provision while gathering the customer perceptions related to the service experience itself. Upon data analysis and through the usage of grounded theory it was possible to categorize the data collected and sort it according to the requirements present within the MSD.

Through the qualitative grounded theory it was conceivable to analyze the data in a flexible manner while shaping each paradigm accordingly to the participating actors and their context. As a result, seven categories were assigned to analyze the customer journey: processes, interfaces, services, factors involved in pharmacy selection, factors involved in service failures, desired outcomes and sampling. Grounded on the data within the mentioned categories, the several service models that comprise MSD were used to characterize the existing service provision within Portuguese community pharmacies in an insightful and comprehensive approach.

Upon completing the existing models for service provision, this study identified critical areas mentioned within the qualitative interviews and proposed an artifact – service bundle, which enhances the community pharmacy service provision while answering acknowledged customer needs. The artifact proposed within this document features an online platform which may contain both the ePharmacare and the home delivery services. The ePharmacare service will focus on improving the quality of pharmaceutical care provided within community pharmacies while increasing the customer access to healthcare by taking advantage of IT capabilities. On the other hand, the home delivery service will attempt to increase the efficiency associated with the provision of pharmaceutical drugs and diversified products. Although these two services approach different customer perspectives, they should be seen as complementary of each other, strengthening the service provision in terms of personalized care and efficiency alike.

Once the new service models were developed and exhibited through the MSD methodology, a focus group with health professionals was carried out at the Family Health Unit (USF) – Marginal with the intent of evaluating the proposed services while collecting crucial data regarding the perspective of other stakeholders within the National Healthcare System.

2 Literature Review

Within this section one may find the context involving the research topics approached throughout this thesis.

2.1 Service Design

It's essential to acknowledge the leading role that the service sector plays regarding the value added within a country, which has reached the rate of 75% of Gross Domestic Product (GDP) in Portugal (WTB 2013). In spite of such dominant presence, there is a documented need for a "service culture" (Gronroos 1990) perhaps due to the insufficient attention that the service sector has received from universities (Chesbrough and Spohrer 2006). In order to develop the hidden potential in services, service science aims to broaden the knowledge of service systems and how the value co-creation takes place within complex constellations of integrated resources (Spohrer and Maglio 2008). Nevertheless, further research is still needed to assess how customers fully perceive the service provision (Woodruff and Flint 2006).

Secondly, a new service-centered paradigm has emerged where value is no longer found within products or transactions, value is rather co-created between service providers and customers through "experiences" along the different service interfaces (Vargo, Maglio et al. 2008). This paradigm shift is fundamental for the development of a service science and allows an emphasis to be put in innovation and enhancement within the service provision itself (Spohrer, Maglio et al. 2007). Furthermore, one should recognize the creation of value between stakeholders as the heart of service provision which can be modified throughout the several service interfaces (Vargo, Maglio et al. 2008). These service interfaces can be conceptualized as connection points between a firm and their customers across different channels, people and technology (Rayport and Jaworski 2005). By combining these factors, it is clear the improved importance that is being given to service interfaces as they now have a vital impact on customers' feelings and their service satisfaction (Grace and O'Cass 2004). Moreover, service experiences became somewhat the locus in the value co-creation process, as they represent the moment that a firm's value proposition is transformed into value to the clients in a relational way (Gupta and Vajic 2000). Within this service scenario, it's no longer enough to define the value proposition and desired channels, a firm must now define all the elements presented within each service experience at a given interface to maximize the desired impact in customer satisfaction.

Another important paradigm in service design is the conceptualization of the service provision as a theater (Grove and Fisk 1992) where actors represent service providers while the service experience takes place on stage in front of the audience, symbolizing the clients. Within this service theater there are several essential key elements that contribute directly or indirectly to differentiate and add value to a firm's offering (Pine and Gilmore 1998). This characterization of the service theater is even brought into a higher consideration when the development with employees of a dramatic script is actually implemented within organizations where the nature of the business requires a face-to-face interactions between service providers and customers (Harris, Harris et al. 2003). This form of dialog between stakeholders within a service should be seen as an interactive process of learning together and perform incremental changes accordingly (Ballantyne 2004).

Furthermore it's also important to comprehend the customer journey as a whole, which can be defined as a set of interactions that a customer establishes with the firm during a certain period of time which may involve phases before and after the present interaction (Mager 2009). Having in mind all the exchanges or touchpoints that a customer experiences throughout the service provision grants a holistic point of view to the service design and allows the service to offer more than the sum of its parts (Patrício, Fisk et al. 2011). This holistic view is shared by the research of Prahalad and Ramaswamy (Prahalad and Ramaswamy 2000), who explain the existence of a relationship between a higher customer participation and an increase in value co-creation within the service, creating the foundations for the development of a competitive advantages.

It is equally remarkable to analyze a customer experience through a behavioral perspective, which allows a more in-depth knowledge of how exactly customers perceive customer experiences (Winsted 1997) and how co-created value and exchange is crucial maximize the lifetime value of desirable customer segments (Payne and Frow 2005). Both of this aspects contribute to a desirable goal which aims at assisting firms in highlighting the customer perception of the service given while improving both the overall processes that support the service itself and the perception of customers' needs (Lusch and Vargo 2006).

Along with the growing acknowledgement of the potential value laying within a well-designed service, there is an identified need for service innovation or perhaps new methods of increasing the value co-creation with intangible and dynamic resources. Such will enable an economic growth while increasing the overall service quality and efficiency (Maglio and Spohrer 2008). Although literature suggests that a lot more focus could and should be placed within innovative service design, service innovation still tends to be less disciplined and less creative than within the manufacturing and technology sectors (Chesbrough 2005; Tidd and Hull 2011). But the innovation process isn't enough just by itself, a customer-centered design is needed to achieve a higher standard in service quality. Hence the need to ensure customer participation within the early stages of a service innovation program, enabling a successful and sustainable service innovation program able of reaching for original ideas and better evaluation of the customers' value perception. (Magnusson, Matthing et al. 2003).

Upon designing a service it's also essential to have in mind the overall set of characteristics inherent to services (Lovelock and Gummesson 2004). First of all there is the perishability or inability of storing a service for future use. As a consequence of perishability, services must be delivered as they are being produced granting them a simultaneity characteristic. Another characteristic imbued in service provision lays within the actors themselves and their heterogeneity. Within this set-up each experience is different – unique, either involving different actors or simply different situations, not allowing for a full standardization of the service provision. Furthermore, it's also critical to understand the intangibility associated with the service provision itself and how much of a challenge such feature can pose in service evaluation. Finally, when approaching service design it's also imperative to acknowledge the participation of the customer itself in the service provision. In order to be successful the service design stage must have into its consideration the mentioned characteristics while planning and shaping useful, usable, desirable, effective and efficient service experiences (Moritz 2005). Upon designing new services, this study approaches a Lovelock and Gummesson (Gummesson 2004) perspective while acknowledging the crucial role that service experiences hold at the core of the service provision (Schneider and Bowen 2010).

2.2 Technology in Service Provision

The constant introduction of new technology within service provision has deeply changed the paradigm of services as well as their potential impact within customers' value co-creation (Bitner, Brown et al. 2000). Such revolution in service provision built the foundation for several opportunities to arise to better complement a service provider's offering while significantly increasing the service value for both firms and clients (Van Den Ende, Wijnberg et al. 2001). Upon designing a service it's vital to take into consideration the technological front while exploring ways of maximizing its potential.

Another consequence that disruptive technology implementation caused worldwide was the shortening of both products and services lifecycles, diminishing the timeframe to capture value from the market. Such shortening of lifecycles places an additional pressure in the research and development departments within firms creating an urge for continuous, fast and effective innovation (Van de Ven, Polley et al. 1999). Hence the need to grasp the right technological knowledge within innovative service design, ensuring that a service meets the requirements to create and maintain a sustained competitive advantage through time.

Moreover, technology enabled new ways of customers and companies to interact and co-create value in new and innovative interfaces, turning nearly every business into a virtual business with unlimited reach (Lapão, Santos et al. 2007). Nevertheless, the implementation of a new service interface must be taken into consideration in the overall service offering and it's the service provider's responsibility to guarantee that the service provided is consistent through all the service offering (Prahalad and Ramaswamy 2000).

Technology-enabled services present new possibilities to co-create value with end-customers which expresses an increase in complexity within the service design itself, especially when considering the service as a whole. Such added complexity throughout the different service interfaces presents a challenge both in service design and service provision (Johnson, Menor et al. 2000). One way of overcoming such increase in service design difficulty is to implement updated design methods capable of dealing both with multiple interfaces and with the technology associated within the frontstage and backstage (Patrício, Fisk et al. 2008). Another key element to ease the design challenges associated with the increase of complexity, brought by the technology, is to tackle the development stages with a multidisciplinary team. Through a multidisciplinary teamwork it is possible to address gaps of understanding in both the frontstage and backstage substantially reducing misconceptions while improving the overall service (Isaacs, Walendowski et al. 2001).

To conclude, the overall implementation of technology within services managed to have a direct effect in the relationship between employers and employees, safeguarding the responsiveness of the firm as whole and supplying concrete and updated information to the decision making process. Furthermore, the use of technology is also associated with an improved performance of a company's Customer Relationship Management (CRM) increasing not only customer loyalty but also overall service satisfaction. The technological impact has also left its footprint within a firm efficiency and profitability creating the necessary conditions for a game-changing competitive advantage within the industry (Barber, Gerst III et al. 2003).

2.3 Pharmaceutical Services

The pharmacy sector has led a rather static business model for the last decades, highly depending on the sale of pharmaceutical drugs to ensure its economic viability (Gastelurrutia and Tuneu 2008). In Portugal, such business model was threatened with the decrease in the sale margins of pharmaceutical drugs. The decline in margins' values which were implemented since 2010 triggered the average revenue from the Portuguese pharmacy sector to be negative for both 2011 and 2012. As of this moment it's estimated that in order to ensure the economic Break-Even Point (BEP), the average Portuguese pharmacy would require an increase of 4,5% in the net margin or a 22.9% growth within the gross margin (Antão and Grenha 2012; Barros, Martins et al. 2012)

In order to face the loss of profitability and the low integration in the healthcare system, the pharmacy sector as a whole was forced to change customers' perception of pharmaceutical services and how these can deliver tangible value to clients. Pharmacists are diversifying the settings in which they practice by expanding and upgrading their business operations (Farris, Fernandez-Llimos et al. 2005) while evolving towards providing services beyond the dispensing of medicines (Wiedenmayer, Summers et al. 2006). In fact pharmacies are now differentiating in number, level, type and quality of services they provide, developing service offerings aiming at increasing their customer satisfaction (Brax 2005).

Moreover, the current international environment is also applying an economic pressure on the traditional business model where a trend is developing among governments, health insurance companies and patients being willing to remunerate a range of pharmacy services that contribute to an improved patient health outcome (Chan, Grindrod et al. 2008).

As a result, a new paradigm is emerging within the definition of pharmaceutical services which can be defined as “an action or set of actions undertaken in or organized by a pharmacy, delivered by a pharmacist or other health practitioner, who applies their specialized health knowledge personally or via an intermediary, with a patient/client, population or other health professional, to optimize the process of care, with the aim to improve health outcomes and the value of healthcare” (Moullin, Sabater-Hernández et al. 2013). The service itself is no longer restrained to the physical branch nor to a pharmacist, increasing the opportunity for service innovation within the community pharmacy (Castelino, Bajorek et al. 2011). The overall aim is a clear shift towards a service-oriented operation, contrasting with the current physical-store oriented setting (Erl 2005)

It's also essential for community pharmacies to acknowledge these paradigm shifts occurring and empower their human resources to increase the value co-creation process in service delivery in order to manage or triage health related problems while contributing to improve the public's health (Anderson, Blenkinsopp et al. 2009).

Within this scenario the pharmacy sector as a whole was forced to change the way business is performed, exploring new opportunities, new services and new ways of co-creating value with the end customer. Consequently, service innovation within the Portuguese community pharmacies not only ensures the survival of their new business models but also guarantees patients an easier access to healthcare, creating a positive impact within Portuguese National Healthcare System expenditure.

2.4 Multi-interface Service Design

As a consequence of technology's introduction within services, customers now face several new channels and interfaces to establish interactions with a firm, thus, allowing for a more dynamic and innovative ways of co-creating value with customers. Now the service experience is not confined to a single channel interaction, rather relying on a combination of channels, interfaces and experiences in order to achieve its potential (Lapão, Santos et al. 2007). Consequently, services now present a more complex service grid and the mere introduction of new services through new channels without a holistic view of the service, frequently results in several incoherent and inconsistent service fragments that fail at achieving customer satisfaction within service experience (Patrício, Fisk et al. 2008). In order to fully assess and successfully innovate within the several interfaces of service design it becomes evident that a multidisciplinary culture is required in order to address issues related with technology integration, business, social and demand innovation (Maglio and Spohrer 2008). It's within this mind-set that multilevel service design (MSD) (Patrício, Fisk et al. 2011) is able to bring a systemic view over the different service design levels while displaying a flexible oversight into the value co-creation process experienced by the customers.

In order to address a multi-interface service design one must first acknowledge the current customer experience while understanding what, in the clients' perspective, is flawed. It's also important to close potential perception gaps existing between the firm and clients while mapping the customer experience, resource allocation and service activities (Patrício, Fisk et al. 2011).

The service concept design presents itself as the second stage where it's vital to catalog the existing customer needs that can be address by the service (Edvardsson, Gustafsson et al. 2000). Furthermore, with the data collected in the first stage it is now possible to decompose the different customer activities within the service which are presented in the Value Constellation Experience (VCE). Moreover, the customer value constellation (CVC) is designed for both the existing service (AS-IS) and the future service (TO-BE) aiming at representing the service offerings and their relations with the customer and outside entities (Normann and Ramirez 1993). Both these models will serve as guidelines in the service design process.

The third stage comprises the design of the firm's service system which can be defined as the arrangement of resources which are linked to other systems through value propositions (Spohrer, Maglio et al. 2007). It starts with the definition of the desired service experience across the service offering within each interface. In order to accomplish such, both the Service System Architecture (SSA) and the Service System Navigation (SSN) models will be used. The SSA represents the structure behind a service system while providing an integrated view of the overall service offering while the SSN provides a more dynamic view, mapping the several paths that customers may take through the several service interfaces which ultimately will describe the service experience (Patrício, Fisk et al. 2011).

The last stage of the multi-interface service design aims at understanding the service encounter experience to select the details of where and how the value co-creation will take place. Then, the Service Experience Blueprint (SEB) (Patrício, Fisk et al. 2008) will be used in order to accurately describe each service encounter experience across the all service offering. The SEB methodology is a service blueprint (Shostack 1984) that offers a solution for designing concrete interfaces without losing the multi-interface perspective (Patrício, Fisk et al. 2011).

2.5 The Service Experience Blueprint

Service Blueprinting (SB) is a design tool that thrives due to its visual nature avoiding, this way, unnecessary misinterpretations. SB methodology can be defined as a flowchart with key activities, stakeholders and elements that when combined describe a service process (Shostack 1984). The Service Experience Blueprint (SEB) (Patrício, Fisk et al. 2008) expresses the first step in joining both the management and the technology perspective within an integrated service design for the several featured interfaces (Patrício, Fisk et al. 2011). Therefore, SEB possesses a multidisciplinary characteristic while tackling the challenges of a technology enabled multi-interface service offering (Patrício, e Cunha et al. 2009).

The SEB methodology itself consists of three stages in order to achieve an integrated service design approach able to leverage each channels' strengths to improve the overall service offering (Patrício, Fisk et al. 2008).

The first stage aims at assessing the service experiences for the different service activities. Such can be achieved through an identification of the service activities performed. In order to achieve such, a qualitative study will be performed to gather rich and unconstrained data from end-customers allowing for personal remarks to be captured in order to guide the design process (Patrício, Fisk et al. 2003).

The next stage features the service design at the multi-interface level which takes advantage of the data collected in the previous stage to develop a Goal-Oriented Analysis (GOA) to determine the suitability of each interface to specific service characteristics. The GOA method is used to capture business softgoals, translating them into system goal which will then be used to support the service design (Mylopoulos 1999). However, this GOA analysis will not be present within this thesis, mainly due to a lack of concrete quantitative research regarding the Customer Experience Requirements (CERs) present in the pharmacy service provision and the exploratory nature of this research.

The final stage contains the service design at the concrete interface level and is achieved through the usage of the SEB diagram. The SEB is able to map the different stakeholders in the service along with their respective responsibilities within the chosen service interface. Furthermore, SEB allows for an in-depth design of both the frontstage and backstage alike in the service provision and value co-creation. Within a SEB diagram it's also possible to define the line of interaction between the customer and the service provider, line of visibility and important physical evidence crucial for the service provision. Moreover through SEB it's also possible to identify possible, waiting points, fail points or interface links with other SEBs. All of these features allow for a detailed while holistic view of the service provision (Patrício, Fisk et al. 2011).

To conclude, using the SEB methodology allows the design of specific service interfaces while defining the overall customer experience across the different channels, improving the client-firm's relationship, loyalty and long-term profitability (Patrício, Fisk et al. 2008). Moreover, through mapping the existing service encounter, it becomes possible to explore further design options that can potentially improve the overall service offering and its service encounter experience while positively stimulating the service design incremental innovation (Patrício, Fisk et al. 2011).

3 Research Methodology

For this research a qualitative method was used to capture the customer's experience when passing through a community pharmacy within their healthcare system customer journey. The data collected through the semi-structured interviews was recorded, analyzed and partially transcribed according to its importance and impact in the research.

3.1 Qualitative Research

The qualitative research is method of naturalistic enquiry which presents itself as less obstructive than its quantitative counterpart while not manipulating the chosen research setting. It aims to understand individuals' points of view without performing any value judgment during the data collection phase (Carter and Henderson 2005). Qualitative research describes in words, rather than in numbers the features of social phenomena through observation and its advantages have been shown in situations which there is a lack of pre-existing knowledge, the issues are sensitive or complex and within exploratory scenarios (Bowling 2009). Moreover, during the last few decades, the interest given to qualitative research as a method to approach social scenarios has risen in a sizable manner mainly due to its ability to capture the rapid changes occurring in the society while being able to synthesizing new concepts (Flick 2009). Within a qualitative research setting, the investigator is also able to freely shift his or her focus as the data collection process progresses in order to perform a more tailored approach to the individual's experience which ensures less superficial reach. Thus, qualitative methods do not aim at obtaining indisputable truths and cannot be measured within an absolute scale or through quantifying term (Neuman, Tanaka et al. 2000).

All of these features enable the qualitative methods to have a positive impact in service science while producing viable and strengthened data to be used within the early service design stages. It's crucial, however, to acknowledge the absence of easy solutions to limit the likelihood that there will be errors within qualitative research, especially since qualitative research tend to have a relatively low sample size when compared to quantitative research (Bowling 2009), increasing the risk of a biased decision making process in the service design. Nevertheless, by ensuring rigor and thus quality within qualitative research it is possible to enrich the existent knowledge of health and healthcare (Mays and Pope 2000).

Although this study focused on withdrawing the benefits of a qualitative research it's critical to not discard the important contribution that quantitative methods can have within the methodology phase. Both research methods should be conceptualized as complementary while being executed simultaneously given the appropriate time set and context.

Within the qualitative methods paradigm, interviews are a widely used research method to capture people's experiences and their perceptions, opinions, and feelings of a desired context. Based on the degree of structuring, interviews can be divided into three categories: structured interviews, semi-structured interviews, and unstructured interviews (Fontana and Frey 2005). Through this study, a set of semi-structured interviews were used as a research method aiming at delving deep beneath the surface of superficial responses in order to reach meaningful information of the individual's experiences and the complexity of their attitudes while maintaining core questions to provide some needed standardization across the response pool (Bowling 2009).

Another methodology that served as a guideline for this research is the grounded theory method which presents itself as a follow-up to the sociologic studies carried out by Glaser and Strauss (Glaser and Strauss 2009) and lays within the qualitative research. The Grounded theory can be characterize as an exploratory approach to the qualitative methods, ensuring a high flexibility within the data collection stage along with an adaptation of the researcher in order to capture individuals perceptions and feelings (Charmaz 2008). Furthermore, the grounded theory method encourages the absence of a relation between the researcher and the research's results, hence defending an epistemological perspective to the qualitative research. Another feature that is present within the core of the grounded theory is the absence of absolute truths, in fact each hypothesis is created rather than discovered and each paradigm is shaped accordingly to the participating actors and the context that involves those (Mills, Chapman et al. 2007).

Although the grounded theory method has been contested regarding the positivism nature of the method, a more constructivist approach might carried out supported by the study of individuals within their natural settings redirecting the qualitative research away from a positivism paradigm (Strauss and Corbin 1998). Therefore, grounded theory strategies do not require an imbued rigidity or prescriptiveness being rather tailored to the research's needs and the focus on meaning carried out by this theory furthers, rather than limits, informational understanding. Moreover, it's possible to adopt grounded theories methods to provide qualitative researchers a set of guidelines from which it's possible to assembly several exploratory frameworks that define relationships among several concepts within the social phenomena (Bryant and Charmaz 2007).

According to Charmaz (Charmaz 2003), the grounded theory methodology possesses several features and components which together are able to flexibility and quality to the research. First and foremost, there is a simultaneous collection and analysis of data which ensures a stronger integration of the research process itself, incrementing information for future data collection.

Secondly, a two-step data coding process takes place, which creates codes as the data is analyzed allowing a deeper focus within the data collection stage, hence, coding starts the chain of theory development. Comparative methods should also be put in practice to increase the rigor present within the research and prevent the researcher from being biased due to the research process. Furthermore, memo writing enables the construction of conceptual analyses while increasing the consistency of the emerging ideas throughout the data analysis, creating a link between analytical data and empirical reality.

Sampling itself should also be perform according to the followed theory, not aiming at population representativeness, unlike quantitative research. Finally, theoretical framework should be integrated within the research process in order to provide the researcher knowledge and insight regarding the existing literature review.

Both the grounded theory and the semi-structured interviews methods share concept of an existing subjective theory before the data collection takes place and flexibility is built-in within both methods alike. This subjective theory has an explicit set of assumptions, which are immediate and which interviewees can express spontaneously while answering an open question, as well as implicit assumptions which together are used for the assembly of the interview's script (Flick 2009).

3.2 Research Methods on Health and Health Services

Research methods on health and related health services range from in-depth investigation of the illness experience and patients' perceptions of health to the evaluation of the service provided within a health unit regarding their appropriateness, effectiveness and overall cost structure (Flick 2009). Within this broad scope it becomes significant to understand the multidisciplinary context that takes place within health research, health systems research and health services research along with its infused complexity and high risk decision making (Pope III and Dockery 1992). Moreover, health research is not limited to singular health services, rather monitoring and evaluating the health system from a holistic point of view, foreseeing the consequences that a health service may have in the overall service experience (Mays and Pope 2000).

Within healthcare, qualitative methods became more frequent in areas such as health services and health technology assessment leading to a sharp increase in the reporting of qualitative research studies in medical journals (Harding and Gantley 1998). Furthermore, qualitative research methods have been widely used due to endorse the evaluation of health outcomes while documenting the experience of chronic illness (Cockerham, Abel et al. 1993).

Upon designing a service within a healthcare system it's of crucial importance to maintain a holistic view of the consequences that such service may have within its stakeholders, hence the importance of involving the participants of such service to better assess the value co-creation process. Moreover, the complexity within such healthcare system itself will likely impose a challenge within the early service design stages, justifying the grounded theory approach performed in this study (Bryant and Charmaz 2007).

3.3 Computer-Assisted Qualitative Data Analysis Software

In order to perform a detailed and in-depth analysis of the data collected, this research was performed with the assistance of a Computer Assisted Qualitative Data Analysis Software (CAQDAS) – QSR NVIVO 10. The usage of this software not only enables a much easier access to the data collected but also stimulated the grounded theory approach to the integration of data analysis throughout the research process.

Coding as a research stage, involves the management and disaggregation of data into text units able to summarize and be categorized within a thematic or descriptive classification system (Boyatzis 1998). Through the usage of a CAQDAS program, it is possible to code extensive qualitative data while enhancing both the efficiency and effectiveness of this process in several ways (Wickham and Woods 2005).

QSR NVIVO 10 enabled to fully code 50 audio files in several fragments containing specific information regarding several topics while allowing a possible return to the source file in case of uncertainty. This coding comprised socio-demographics, artifacts, references and partial transcription within each interview. By doing so it became possible to identify as much information as possible for the given interviews while maintaining a holistic approach to the data. Furthermore, the software greatly increased the flexibility efficiency of the data analysis process by bridging the coded information with the audio section enabling a detailed perception of the interviewee's feelings.

3.4 Interviewing

The semi-structured interviews used within this study had a topic-based nature aiming at assessing the healthcare perception of the population with a crucial focus on the community pharmacy's role. Additionally, for this study a purposive sampling was used (Bowling 2009) to strengthen the rigor and reliability of the results obtained, such sample aimed at gather individuals' perspectives of healthcare services as they are experiencing them directly or indirectly, allowing the collection of an updated and fresh data able to express the interviewees true feelings and opinions. By interviewing citizens within health centers and hospitals it becomes possible to not only understand their customer journey, full of experiences and possible frustrations, but also enables the collection of updated feelings while stimulating not only an experience-based speech but also the individuals' innovation aptitude (Flick 2009).

The semi-structured qualitative interviews mentioned above took place both in Oporto and Lisbon, targeting the two biggest cities within Portugal in order to provide strength to the data gathered and to ensure that the customer experiences were captured through different geographic perspectives. In Oporto 31 interviewees were contacted in the Health Center of Campanhã and in the Hospital of St. António, between 1st of April, 2013 and 5th of April, 2013. While in Lisbon the contact was made with 40 interviewees in the Health Center of Ajuda and in the Hospital of Egas Moniz between 15th of April, 2013 to 25th of April, 2013. These interviews targeted a population that was directly or indirectly in contact with the healthcare system in order to collect updated data regarding customers' perception of the service provision. All the interviews were audio recorded, with the interviewees' consent, to allow a future in-depth analysis of the content. By recording the interviews it was possible to decrease the erratic nature of the observer within this research setting (Osgood 1953) while maintaining a disruption-free dialogue able to fully access the interviewees' perceptions, experiences and opinions.

All the interviews started with a brief introduction of the topic of the research – interviewees' experiences with pharmaceutical services, along with the organization where such research took place. It was also mentioned the context of the interviewer the estimated length of the interview and the focus on listening to the interviewees' opinions and experiences. This information phase served as tool to reduce the individual's possible anxiety caused by either interacting with the researcher or being audio recorded. The interviewer also ensured that in spite of the audio recording, the data collected was confidential. The interview script is exhibited in Appendix A.

Regarding the inclusion criteria, the interviewee had to be an adult (over eighteen years old) and visit the pharmacy at least once every three months in order to give an updated and informed contribute to the research process. Moreover a threshold was also implemented in order to ensure that data was gathered from the different age groups, the age groups are the following: 18-29, 30-39, 40-49, 50-59 and more than 60. Initially this last age group was divided in 60-70 and more than 70, but data saturation was quickly reached (Guest, Bunce and Johnson, 2006) and the age group was expanded to more than 60. Throughout the interviews an effort was also put into ensuring the variety in gender through the different age groups and in the overall sample.

Since this qualitative study aimed at gathering the pharmacy's customer experience the exclusion criteria included any pharmacist or pharmacy co-worker in order to retain a non-biased response pool regarding the service provision.

All the mentioned measures should not be seen as constraints but rather as ways of ensuring the strength and viability of the data. In total, 71 interviews were performed which included 37 females and 34 males. Out of these 71 interviews, 50 interviewees passed both the inclusion and exclusion criteria, hence forming the sample for this study which comprises the data gathered from the interviews conducted with 26 females and 24 males.

Table 1 presents the main features regarding the interview process such as setting, age, gender and interview length for both the cities of Lisbon and Oporto.

Table 1 – Interviews' length and geo-demographic information.

	Lisbon (n = 28)	Oporto (n = 22)	Combined (n=50)
Setting:			
Health center	11	8	19
Hospital	17	14	31
Age:			
Mean	44,7	46,5	45,5
Range	22-75	23-77	22-77
Gender:			
Female	15	11	26
Male	14	10	24
Interview length:			
Mean	13min.	16min.	14min.
Range	7 – 19 min.	9 - 29 min.	7 - 29 min.

Another noteworthy observation can be associated with the interviews' length, since longer interviews usually generated a higher number of key references and citations.

3.5 Data Analysis

Throughout this stage a grounded theory approach was carried out where the data coding and its analysis were made simultaneously, thus allowing for consistent categories to emerge (Charmaz 2003). According to Morse, in order to successfully approach the qualitative data analysis it's important to understand not only the phenomenon under study but also understand the relations between the linkages within its aspects. Afterwards, the researcher must justify the existence of the bridges between nodes with the data gathered and only then, it's possible to re-contextualize the paradigm and input new knowledge about the phenomenon (Morse 1994).

Therefore, the data contained within the audio files was fully coded into separate nodes. With the nodes defined, it was now possible to start assigning categories, which could be of socio-demographic nature, artifact nature, reference nature and quote nature. For this stage the CAQDAS QRS NVIVO 10 was extremely useful as it allowed an ease control over the information coded while framing the overall information provided by the data. Upon coding, the data was then translated from Portuguese to English.

Last but not least, the data was structured according to the categories found and exposed according to the different topics. It's also crucial to acknowledge the holistic perspective that should be kept while restraining from a biased previous knowledge, hence avoiding endangering the rigor and quality of the research.

3.6 Focus Group

The focus group methodology is a form of group interview that focus on capturing the information verbalized by the different participants while taking advantage of the interaction established within the group itself (Kitzinger 1994). Such paradigm stimulates the several individuals to express their feelings, opinions and experiences in a comprehensive environment, showcasing not only what the participants think but also how do they reach such perspectives (Kitzinger 1995). The key element supporting the usage of this methodology lays within the fact that group dynamics may help individuals to explore and clarify their perspectives which has a special impact when the researcher has a series of open ended questions to ask the research participants (Flick 2009).

This methodology was originally used within communication studies, quickly reaching the assessment within health education and healthcare awareness (Basch 1987). Moreover, the usage of the focus group methodology within health has proven to be effective in stimulating healthcare research while creating a positive impact within the advance of health-related state-of-the-art (Massey 2012). It's within this scenario that this research will focus at gathering the advantages laying within the focus group methodology.

For this study, the usage of a focus group aimed at gathering the perspective of health professionals regarding new possible services to be implemented within community pharmacies. Whereas the qualitative interviews were designed to collect information among community pharmacy customers, the usage of focus groups aims at acknowledging the different perspectives from stakeholders within the National Health System. To accomplish such, this focus group took place in Family Health Unit (USF) – Marginal on 16th of August 16, 2013.

In order to perform this method a group of sixteen research participants were invited to take place in a focus group. All these individuals were associated with USF – Marginal and their occupations included: general physicians, medical interns, nurses, health technicians and clinical assistants. Due to schedule constrains, this focus group had a 30 minute duration and took place after a strategy meeting targeting the implementation new management tools within Primary Healthcare units.

During this session, the outcomes from the several service design stages within this study were presented and the researcher inquired the participants to provide constructive feedback on the several key aspects of the new service. Upon answering, the participants were then challenged to provide possible solution that in their point of view could tackle existing issues while ensure the positive aspects of the new services.

The knowledge gathered during this phase was used to evaluate the service design itself and this approach will be present in the discussion section of this document.

4 Analyzing the Customer Journey

Within this section, the information gathered throughout the interviews is presented and categorized theme-wise. Several topics, themes and concepts emerged from the interviews' data and it's of crucial importance to define appropriate categories in order to successfully approach the early stages of service design. Once each category is defined it's then possible to characterize the current service while identifying possible new features able to improve the value co-creation process.

In order to define the current pharmaceutical services being provided within community pharmacies, the Multilevel Service Design (MSD) (Patrício, Fisk et al. 2011) method will be used to prototype the Customer Value Experience, the Customer Value Constellation, the Service System Architecture, the Service System Navigation and the Service Experience Blueprint. All of this models will attempt to fully describe the pharmaceutical service AS-IS, enabling the possibility to improve the current service offering accordingly to the data collected. A scheme of the models used within this methodology is presented in Appendix B.

4.1 Defining categories

In order to successfully analyze the service from a holistic point of view, it's crucial to define the categories that will be associated to the several data gathered through the interviews. These categories will then sustain the service design methods proposed by the MSD methodology (Patrício, Fisk et al. 2011) while guiding the researcher to a better data management. In order to ensure the consistency of the categories, these will be defined according to the themes approached by the interviewees, common artifacts mentioned and resources needed to develop the service models mentioned above.

The categories are as follows:

- **Processes:** defining the several steps that customers take before, during and after the service provision. This category will enable the design of the Customer Value Experience model for the current pharmaceutical services being provided within the community pharmacy.
- **Interfaces:** unfolding where and through what means or technology the customers interact with the pharmacy while analyzing their experiences. Such category will focus on understanding the different service experiences across the current channels while identifying possible opportunities for the overall service offering.
- **Services:** describing the services that community pharmacies provide to their clients while understanding the customers' perception of such encounters. Within this category it will be possible to create an updated service concept being offered by community pharmacy while enabling the design of the Customer Value Constellation for the existing service offering.
- **Factors involved in pharmacy selection:** clarifying what are the main elements that positively or negatively contribute to customer loyalty. Through this category key features will be listed that justify customer allegiance within the community pharmacy service sector.

- **Factors involved in service failures:** explaining current customer frustration that are present within the existing service provision. Such issues will play a crucial role within new service design and will allow a customer-driven improvement proposal.
- **Desired outcomes:** defining what outcomes could satisfy customer needs while understanding how value is perceived by these stakeholders. This category will feature innovative ideas or concepts described by the interviewees along with wanted and unwanted tendencies that these individuals foresee.

Along with the categories mentioned above, the sample-related data shaped the framework for another category to emerge – **Sampling**. Within this category it is possible to assess where the interview took place, interviewees' socio-demographic information, interviews' length and the service touchpoints established within a timeframe. This category will attempt to provide context to the data collected within interviews to better assess the service experience and customer perception of the community pharmacy service. Information regarding this category can be found in Table 1 and Appendix C.

Another relevant issue within this study is how such categories were formed from a qualitative perspective. These categories were not planned beforehand nor were they imposed while the interview took place, they are rather grounded on the information collected. Hence, the definition of such categories resulted from the references spoken by the different interviewees, ensuring a customer-driven design throughout the study.

As a result of such approach, the data and related categories had to be allocated and structured by the researcher in order to allow an effective and efficient data analysis. Such paradigm led to a subjective stance as both the categories and subcategories were dependent on the researcher's perspective. Hence, the characterization of each node is highly dependent on each individual interpretation which could lead to a different setup of categories and nodes. Regardless of such scenario, within this study it's defended that the current format of categories is the one that better describes the data collected and enhances the early stages of service design. Such statement will be supported through an in-depth description of each category along with their synergy with the service design method approached within this study.

4.2 Processes

The process category is responsible for listing all the activities that the customer was part of before, during and after interacting with the community pharmacy service. Within this category it will be possible to not only recognize the context in which the service takes place but also identify potential opportunities that would improve the overall service offering. This category will also store the needed data to design the Customer Value Experience, which represents the first step in Multilevel Service Design. It's vital to conceptualize the community pharmacy as a set of services that do not operate isolated from the remaining society and remaining pharmacies.

Upon designing a service it's imperative to pursue a holistic perspective of the service offering while considering the existing service stakeholders and the service environment itself. Such approach gains a reinforced importance when the service being design is integrated within the national healthcare system which grants an added complexity and risk within decision making stages.

During the interviews the individuals were stimulated to express what factors led them to enter in contact with the pharmacy in order to acknowledge the several activities that led to the service provision.

“If I require some pharmaceutical drugs, I normally perform a phone call to my regular pharmacy in order to check their availability”- 66 years old, male, retired, regarding preceding actions before visiting a pharmacy.

After interviewees fully answered the question, the researcher then proceeded to inquire what were the next steps after those service touchpoints and if there was any standard pattern in their service experience.

“For me the pharmacy is the “end of the line”, I acquire the pharmaceutical drugs that I need and take them home”- 55 years old, female, secretary, regarding following actions after visiting a pharmacy.

After some interviews a framework started to emerge, as interviewees revealed different ways of perceiving the role of the community pharmacy within the national healthcare system.

Throughout the 50 interviews, 27 individuals (54% of the sample) referred that in case of a health issue they always sought a general practitioner for medical advice and only then, with the prescription, they approached the pharmacy. These 27 researcher participants possess an average age of 46,5 years, ranging from 23 to 77.

“I often approach a pharmacy after getting a prescription from my family physician”- 77 years old, female, retired, regarding attending a practitioner consultation before visiting a pharmacy.

Contrasting with this scenario, 9 individuals (18% of the sample) stated that upon experiencing a health issue they first headed to their regular pharmacy and only then, if needed, they would attend a general practitioner consultation. These 9 interviewees have an average age of 42,2 years old, which fluctuates from 27 to 55.

“I always seek some health counseling in my regular pharmacy since my family physician has his office much further away.”- 36 years old, male, technician, regarding visiting the pharmacy first.

The remaining 14 research participants (28% of the sample) expressed a somehow intermediate route between the two paths above. According to these individuals they perform an assessment of how critical their health issue is and only then they decide which service they attend. If the health issue appears to be of minor importance these interviewees generally visit the community pharmacy first. On the other hand if their health condition is somehow threatening, they immediately seek medical advice through a general practitioner consultation. This group of research participants have an average age of 45,5, which ranges from 22 to 75.

“It depends on my health condition. If I experience some minor issue I normally seek counseling within a pharmacy, otherwise I go directly to a physician.”- 33 years old, male, musician, regarding the decision of which service to attend.

Grounded on the data presented above, some evidences show that the role of the community pharmacy within the national health systems differs among individuals. Whereas some perceived the pharmacy as one of the last stages in their path others acknowledged the pharmacy as a meaningful frontline in healthcare and often trust them in critical situations.

Upon designing a new service it's wise to have in mind this binary scenario since there is an impact in the Customer Value Experience depending on customers' perception of the pharmacy.

Figure 1 illustrates the Customer Value Experience (CVE) which embodies the first step to take when designing a service concept while having a special focus on the customer side of the service encounter. The CVE displays the set of activities that precede and follow the service provision which may include a pharmacy visit (supported by 46% of the research participants) before a general practitioner consultation. The goal of this phase is to describe, as accurate as possible, the current steps being taken by clients that seek the service provider.

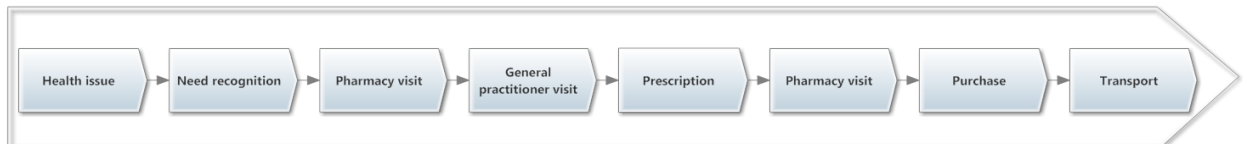


Figure 1 – Customer Value Experience for the current community pharmacy.

For customers that do prefer to interact with the community pharmacy before visiting a general practitioner office, there may be two immediate pharmacy visits involved within the treatment of a health issue which may present an opportunity to improve the efficiency of the whole process.

“I would rather experience a faster and simpler service within the pharmacy. I feel like there are too many small steps” – 33 years old, male, unemployed, regarding the process involving a visit to the pharmacy

Therefore, it's vital to recognize the different approaches that community pharmacies' customers have when interacting with the service while understanding what decision making process triggers a pharmacy visit. Through the usage of such information within service design, it becomes possible to take advantage of existing opportunities within the VCE which may improve and expand the service offering itself.

4.3 Interfaces

Within this category, information regarding service channels and interfaces will be stored and analyzed with the intent of identifying new opportunities and possibilities to enhance the provision of pharmaceutical services. This category will also help to characterize the reach of such services and more importantly, the conditions in which service touchpoints take place. By listing the existing interfaces and the services that are being provided through them, it will be possible to better define the service concept and enhance the service design process.

Throughout the performed interviews, research participants were asked to describe how and through what means they established service touchpoints with the community pharmacy while inquiring about the performance of their selected interfaces.

Firstly and foremost, all the 50 interviewees stated that they interact with community pharmacies by visiting the physical store. In fact some, some interviewees were caught by surprise when asked if this was the only way their interacted with a community pharmacy, due to the lack of alternative service interfaces.

“I go to the physical store... How else would I be able to get my medicines?”- 72 years old, male, retired, regarding the usage of the physical channel.

Another remarkable scenario is the satisfaction and the perception of service quality associated with a trip to the physical store.

“Well, you could say that I’m satisfied since it’s the only channel available. I’m forced to use it.””- 48 years old, male, professor, regarding the usage of the physical channel.

It can be seen that community pharmacies’ customers have to somehow settle for the existing service since different pharmacies don’t yield different service interfaces. Apart from the physical channel, the telephone was also mentioned in the speech of three research participants (6% of the sample) as a way of interacting with the pharmacy.

“When I have an issue with my medicines I normally call my regular pharmacist through the phone to obtain some pharmaceutical counseling.”- 38 years old, female, secretary, regarding the usage of the telephone channel.

Such behavior follows the trend of pharmaceutical services leaving the physical limits of the pharmacy in order to provide a more complete service offering. Regarding unused channels the major source of references was the internet and the absence of concrete information within this channel.

“There is a gap within this channel (internet), as it seems to be under-used along with scarce information on its usage.”- 22 years old, female, student, regarding the lack of variety in channels.

As a service provider, Portuguese community pharmacies must be aware of customer needs when approaching the design of the service provision. The development of new channels would allow an enhancement of the service offering while setting the foundations for new service interfaces to arise. These new interfaces could yield an increase within the number of service touchpoints, thus contributing for shortening the existing gaps between service stakeholders.

When designing new pharmaceutical services, all the characteristics mentioned above should be taken into account in order to achieve the desired service experiences throughout the several interfaces.

4.4 Services

The services category aims at listing all the services that interviewees experienced within their community pharmacy visit. This section will also acknowledge what is the role of the pharmacy for the research participants and how value is co-created between these two stakeholders. Moreover, this category will identify how the different services are being delivered and if these have a positive impact among customers’ satisfaction. Quotes regarding the importance of the pharmacy in interviewees’ lives will also be analyzed, in order to properly assess how crucial pharmaceutical services are within Portugal.

The list of these services will also enable the definition of the current Customer Value Constellation, Service System Architecture and Service System Navigation which will aid in the characterization of the existing service for community pharmacies within Portugal. This representation of pharmaceutical services should be seen as one of the major contributions of this study and aims at supporting the development of the service design stages through an in-depth data analysis.

To gather information regarding this topic, interviewees were asked what role the community pharmacy had in their lives while attempting to understand what value customers perceive in available services. Afterwards, research participants were requested to express their experiences and satisfaction with the mentioned services along with some possible remarks regarding the service provision.

Throughout the interviews, interviewees' feedback began to create a split-scenario where one's view contrasted to other's perspective which increased the difficulty when attempting to define a coherent service concept. Moreover, this contrast in feedback also amplified the already sizable challenge within new service design.

On one hand, some interviewees perceived the community pharmacy as an infrastructure dedicated to the retail of pharmaceutical drugs. This subgroup of research participants aimed to purely obtain their medicines along with some pharmaceutical counseling regarding their purchase.

"The pharmacy is a retail store that sells pharmaceutical drugs." – 48 years old, male, professor, regarding the role of the pharmacy in his life.

"For me, a pharmacy is a medicine depot." – 35 years old, male, professor, regarding the role of the pharmacy in his life.

On the other hand, various interviewees expressed their perception of the pharmaceutical services as more wide-ranging and with greater potential than the previous subgroup. These individuals perceived value within the knowledge possessed by pharmacists and often stated that the community pharmacy is currently has a lot of possibilities to improve their customers access to healthcare.

"It's a health space with an easier access than a hospital or a health center" – 25 years old, male, unemployed, regarding his view of a pharmacy.

"If you trust your pharmacy, this place somehow replaces the health center for some minor health issues" – 38 years old, female, unemployed, regarding the role of the pharmacy in her life.

"The pharmacy is 'the middleman' between a trip to the doctor and self-medication" – 58 years old, male, professor, regarding the role of the pharmacy in his life.

"Citizens can acquire relevant information regarding minor health issues, within a pharmacy. The pharmacy also works as a frontline for screening major health issues" – 23 years old, female, marketing intern, regarding the role of the pharmacy in her life.

References related to services which were experienced by research participants can be found in Table 2. For the fulfillment of such table only services references that interviewees took active part in where taken into consideration.

Such decision was taken in an attempt to ensure that the presented information is indeed grounded on customers' perspectives and experiences, strengthening the service concept definition.

Table 2 – Frequency of service references.

Service	References
Provision of pharmaceutical drugs	50
Pharmaceutical counseling	31
Healthcare for minor issues	20
Provision of dermatological products	10
Determination of biochemical parameters:	
Blood pressure	9
Cholesterol	5
Glucose	3
Screening for major health issues	5
Vaccination	3
Nutritionist consult	2
Provision of baby related products	1

4.4.1 Customer Value Constellation

Based on the data presented in Table 2 it is now possible to describe the service using the Customer Value Constellation (CVC) tool, in order to provide a more visual context of the service environment while focusing how such service is perceived by end-clients. Due to the two major contrasting views of the service provisioned within pharmacies this document presents two models of the CVC in an attempt to clarify the customers' perspective. In Figure 2 the CVC of the provision of pharmaceutical drugs is displayed.

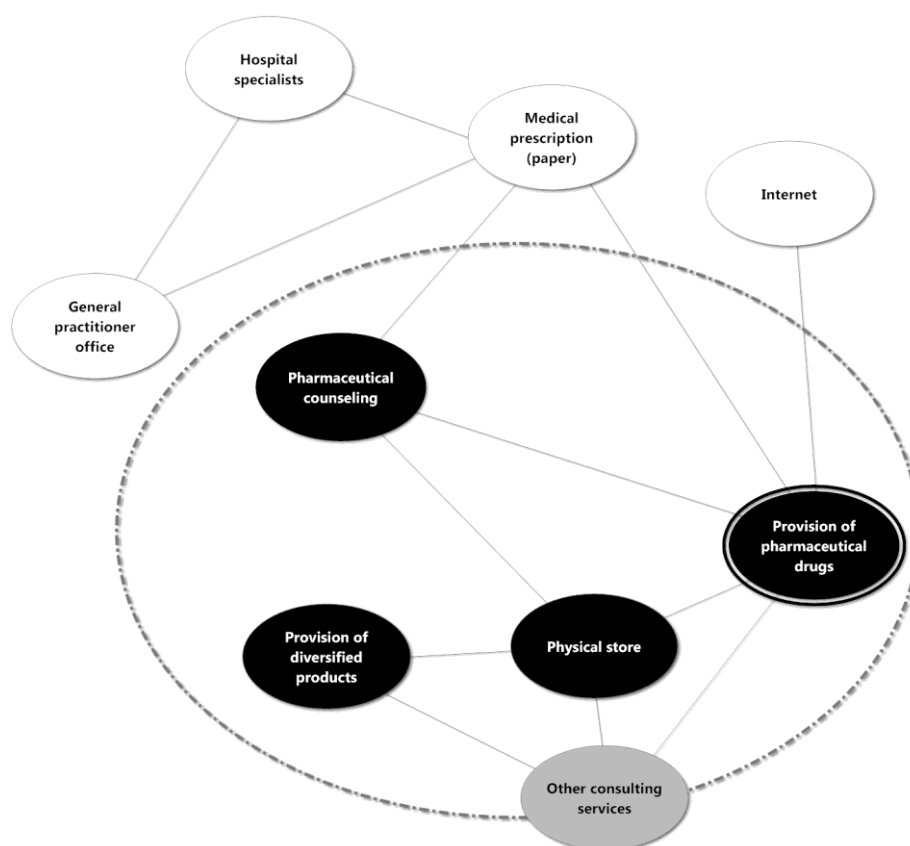


Figure 2 – Customer Value Constellation for the current provision of pharmaceutical drugs.

Firstly and foremost, it's important to explain the core elements of the CVC. The white ellipsis symbolize services or entities which are located outside of the community pharmacy

service reach (defined by dotted line). The grey ellipse represents services or entities which somehow share a partnership with the community pharmacy service offering. The black ellipsis embody the core services which the community pharmacy is responsible for. Lastly, the lines represent possible interactions between the different services and entities which may or may not happen consecutively in service touchpoints.

In Figure 2 it's possible to identify the general practitioner office and the hospital specialists which may or may not generate a prescription, such prescription can then be used in pharmaceutical counseling or for the purchase of pharmaceutical drugs. At the moment pharmacies are provisioning pharmaceutical drugs through a physical store which still requires the validation of a paper prescription, however that scenario will soon be improved with the implementation of the electronic prescription and this study will factor such change of paradigm in the new service design. Regarding the other consulting services (such as nutritionist consults) these often generate the provision of diversified products or possible provision of pharmaceutical drugs which can and should be complemented with pharmaceutical counseling. In this CVC it's possible to identify some underused channels to provision pharmaceutical drugs to the end-customer, which may present itself and an opportunity for the new service design section.

Figure 3 expresses a Customer Value Constellation where the focus is the pharmaceutical counseling services existing within a community pharmacy. This version is an AS-IS model which complements the CVC found in Figure 2 and aims at clarifying the contrasting views expressed by the research participants.

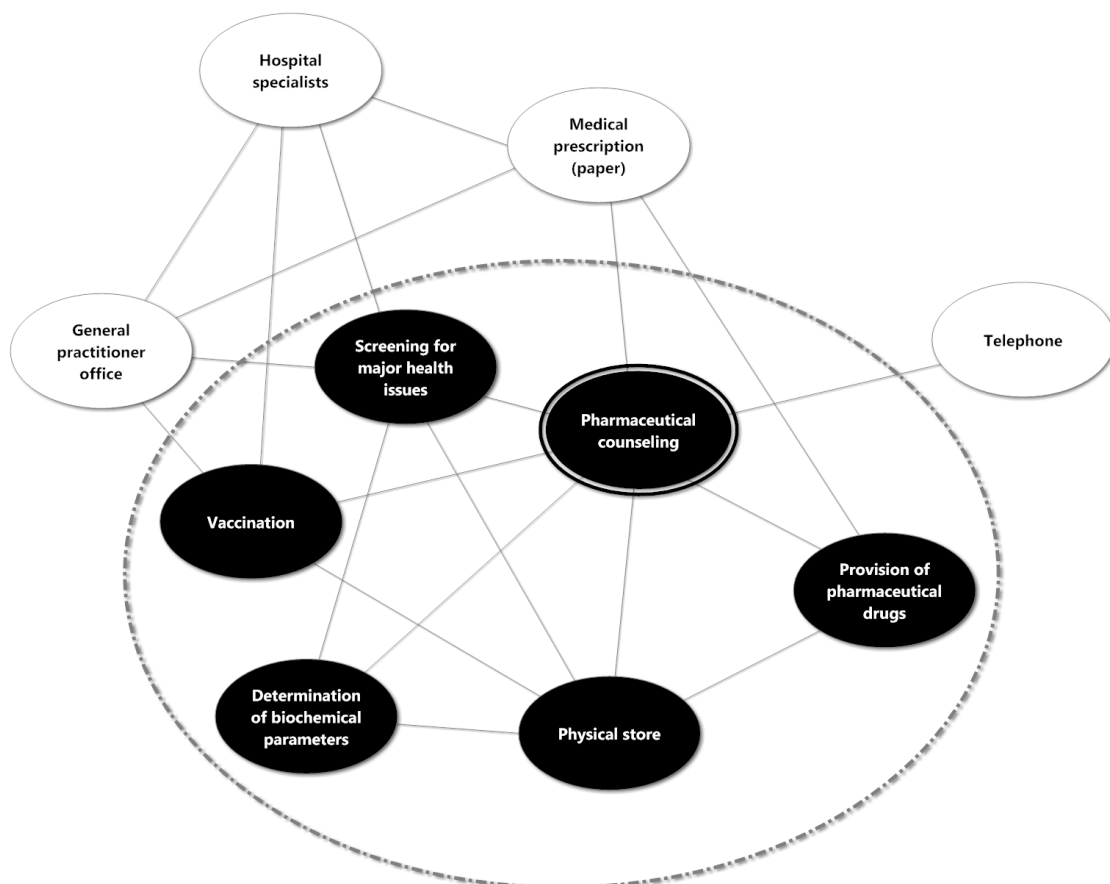


Figure 3 – Customer Value Constellation for the current pharmaceutical counseling.

In this CVC, the focus lays in the pharmaceutical counseling service and its interactions with the various services being provided in the pharmacy and by telephone. The previous

interactions between external entities and the paper prescription are still represented since pharmaceutical counseling involves a wide scope of actions. It's also possible to analyze the connection that determination of biochemical parameters establishes with screening for major health issues which then, along with vaccination, may have link with both the general practitioner office and the hospital specialists. Such network represents the healthcare infrastructure that a subgroup of research participants claimed to take advantage of. Within this CVC it's also possible to acknowledge the potential of the synergy between the different stakeholders in this service environment and the opportunity to create new services within that setting.

4.4.2 Service System Architecture

After defining the Customer Value Experience and the Customer Value Constellation, it is now possible to identify the multiple patterns of navigation across services interfaces, starting with the Service System Architecture (SSA). The SSA is responsible for presenting several interface options each possessing their own stakeholders while offering an integrated view of the multi-interface mix. SSA is also responsible for providing a concrete structure where the Service System Navigation is able to operate, granting this way a well-defined and flexible service system capable of identifying resources needed for supporting different tasks within services.

In Figure 4, the AS-IS model is represented for the existing service within Portuguese community pharmacies which comprises essentially the provision of pharmaceutical drugs.

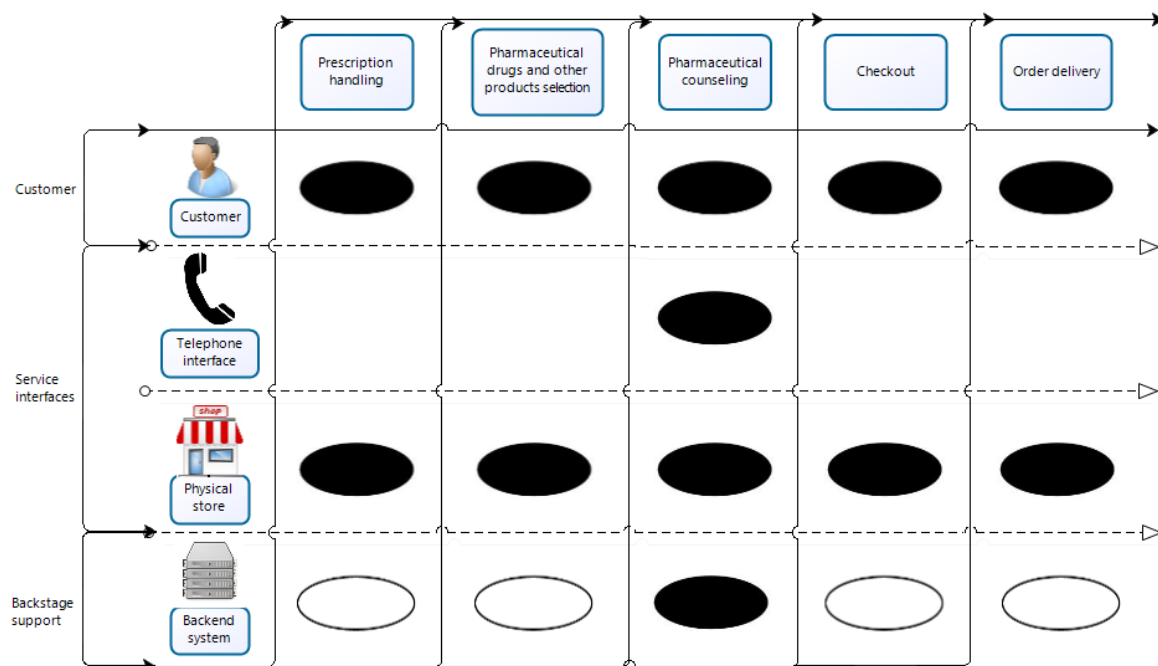


Figure 4 – Service System Architecture for the current provision of pharmaceutical drugs.

In the SSA model presented above, the activities are represented within rectangular forms at the top of Figure 4, while the customer, backstage elements and different interfaces lay on the left side. Black ellipsis embody the direct and crucial participation of a stakeholder in an activity, while white ellipsis illustrate the support action of a stakeholder within the setting. For instance, in the activity “Prescription handling” both the customer and the physical store (community pharmacy) are characterized as crucial stakeholders while the backend system

offering but also for possible future increments. Within this section it will be possible to list to what extent do Portuguese customers value the existence of a regular pharmacy in their daily lives while analyzing how far away such pharmacies are from their homes or workplaces. Furthermore, this category will also identify what are the attributes present inside the community pharmacy which interviewees considered to be crucial in order to achieve satisfaction in their service experiences. Findings within this segment must be taken into consideration for service design stages and should be considered as one of the relevant outputs provided by this study.

Bellow, in Table 3, one may find the data related to pharmacy preferences along with the distances that such individuals must cross in order to visit such pharmacy. Then, such data will be analyzed along with key quotes in order to acknowledge the importance of a regular pharmacy in customer satisfaction.

Table 3 – Pharmacies' characterization.

	Sample (n=50)
Regular pharmacy	44
Distance:	
Less than 50 meters	8
From 50 to 200 meters	14
From 200 to 500 meters	12
From 500 to 2000 meters	4
More than 2000 meters	6
Unspecific pharmacy	6

As it can be seen, 44 interviewees (88% of the sample) stated that when possible they would visit their regular pharmacy and that such fact had a positive impact in their experience. It's also interesting to analyze that some research participants stated to have closer pharmacies to their home or workplace but either due to the service provided or due to the physical evidences these individuals preferred to travel the extra distance in order to visit their preferred pharmacy.

"I have a regular pharmacy. In fact I'm their customer for over thirty years. Over the time, some other pharmacies opened in my area, one of them is right across the street. But I still prefer going to my pharmacy" – 69 years old, female, retired, regarding the importance given to her regular pharmacy.

Another remarkable issue lays within the relation established between pharmacist and customer which may create a competitive advantage to that store in particular.

"Once we 'break the ice' with a certain pharmacist we are somehow bond to return to that store because we feel welcomed and comfortable." – 59 years old, male, retired, regarding the existence of a regular pharmacy.

Furthermore, some interviewees stated that the existence of a regular pharmacy is worth searching for since such can have a direct impact in customer satisfaction.

"I'm satisfied with the current pharmacy since I kept changing it until I found one that satisfies my needs" – 48, male, professor, regarding the existence of a regular pharmacy.

“Of course I’m satisfied with my current pharmacy, otherwise I would’ve changed it already” – 66, male, retired, regarding the existence of a regular pharmacy.

Within Table 4 it is possible to obtain the references associated with positive features that interviewees enjoy when visiting a community pharmacy. Such attributes were often associated with a satisfying service experience and crucial in pharmacy selection.

Table 4 – Frequency of references involving the pharmacy selection.

Factors	References
Personalized care	35
Distance	30
Opening hours	8
Professionalism	8
Physical evidence	8
Quickness	6
Quality of information	4
Pricing	2
Pharmacy stock	2

Upon analyzing the table above, two major attributes can be identified which research participants have often mentioned in their interviews. One of these factors, according to 35 individuals (70% of the sample), is the quality and presence of a suitable personalized care in service.

“Personalized care. I don’t mind traveling for some kilometers if the pharmacy provides me with a proper service” – 66 years old, male, retired, regarding important factors when choosing a pharmacy.

Along with an appropriate personalized care, the distance factor was also acknowledged by 35 interviewees (60% of the sample) as crucial in the pharmacy selection process.

“I normally just go to the closest pharmacy to my house. I don’t enjoy driving when I have a health issue.” – 38 years old, female, actress, regarding important factors when choosing a pharmacy.

Grounded on the information featured above, distance does play a critical role in the decision making process performed by interviewees when selecting a pharmacy. However, it is strategic to acknowledge the significant contribution that other characteristics can have in customer satisfaction and ultimately in achieving a competitive advantage.

When approaching the service design stages of a new service one must comprehend the success factors present in the existing service while ensuring that these attributes or an improved version of them will be within reach of a future service experience.

4.6 Factors involved in service failures

After analyzing success factors within community pharmacies, this study shifts its focus to the issues negatively affecting research participants. Both this and the previous category should be approached as different perspectives which eventually complement each other. When designing a new service, such process should aim at taking advantage of the positive attributes of the current service while attempting to solve issues related with the experience provided to

customers. This category will list topics that interviewees considered to be undesirable within their customer journey along with remarks that express to what extent these issues could ruin a customer experience.

In Table 5 it is possible to examine the several service failures that interviewees identified through the interviews. The fulfillment of this table required the mentioned issues to be experienced by the research participants with the aim of ensuring the analysis of data grounded on customers' experiences.

Table 5 – Frequency of references which caused an unsatisfying service provision

Service failures	References
Not personalized service provision	16
Lack of pharmaceutical drugs	16
Lack of professionalism	16
Long queues	10
Lack of open pharmacies	4
Inappropriate counseling	3
Lack of generic pharmaceutical drugs	1
Lack of nurses to apply vaccines	1
Pricing	1

As displayed in the table above, not personalized service provision and lack of professionalism are amongst the most referred service issues that research participants acknowledged throughout the interviews.

“The visit to the pharmacy usually affects health issues and customers do not want to experience any kind of stress if their health is at stake” – 36 years old, male, technician, regarding an unappropriated service provision in community pharmacies.

Another recurrent issue expressed along the interviews focuses on the lack of pharmaceutical drugs and how such paradigm is slowly changing interviewees' perception of the community pharmacy.

“There is everything like in the pharmacy' somehow this isn't true anymore” – 67 years old, male, retired, regarding the lack of pharmaceutical drugs.

However, several individuals voiced some degree of empathy towards the pharmacy in such scenario, often defending their regular pharmacy or even the pharmacy sector in general.

“I don't feel like it's the pharmacy fault when they don't have the pharmaceutical drugs that I seek. I blame the system. Not to mention that most of the times they have it in the next day” – 59 years old, male, retired, regarding the lack of pharmaceutical drugs.

“It's common for the pharmacy to not have in stock some of my pharmaceutical drugs but they normally refill it in the next day” – 58 years old, male, professor, regarding the lack of pharmaceutical drugs.

Additionally to the presented data, some interviewees also stated some degree of stress when attempting to find a pharmacy at night.

“Information regarding open pharmacies seems to be confusing and in some cases absent” – 22, female, student, regarding the lack of information when seeking for pharmacies at night.

Upon designing a new service such relevant issues must be taken into consideration with the purpose of achieving a customer-driven service design. If a new service is to be implemented within Portuguese community pharmacies, then this scenario can be taken as a suitable opportunity to improve the service offering through a customer perspective.

4.7 Desired outcomes

The final category within the analysis of the customer journey unveils desirable outcomes that interviewees considered to improve the existing service experience. Throughout the interviews research participants were asked for suggestions, improvements and service ideas which were able to not only deal with some design flaws but also improve the overall service offering. After identifying both the positive aspects of service delivery as well as the negative issues involving unsatisfying service experiences, this category will now assess possible improvements able to close the gap between customers and service providers. Furthermore, a list of references containing desired outcomes is presented along with some interviewees statements in order to properly consider the reasoning supporting such claims.

Table 6 features the references spoken throughout the interviews regarding desirable outcomes that research participants recognized value within a Portuguese community pharmacy setting.

Table 6 – Frequency of references involving desired outcomes for the community pharmacy

Outcomes	References
Home delivery	16
Internet pharmaceutical drugs order	10
Pharmacy as the frontline in NHS	8
Product diversification	4
Increased synergy between health professionals	4
More personalized pharmaceutical care	2
Empower pharmacies' staff	2
Improve minor healthcare within pharmacies	2
Smartphone pharmaceutical drugs order	2
Pharmaceutical consultation	2
Self-medication overview	1
Family pharmacist	1
More preliminary exams available in pharmacies	1
Improve pharmaceutical information in pharmacies	1
Drive-in service in pharmacies	1

As presented in the table above, the list of suggestions is quite extensive, which shows an active individual stance, especially when approaching a business sector with an inherent inertia regarding service innovation.

After gathering desirable outputs that interviewees saw value in, the research then inquired for the specific reasoning behind such statements stimulating a dynamic interaction during the

interviews. As a result of past service experiences some research participants stated the several advantages that a pharmaceutical drugs delivery service could bring to pharmacy customers

“Home delivery during the night solves the issue of delivering the products at home while avoiding an unpleasant and possible dangerous trip” – 35 years old, female, actress, regarding the benefits involving a home delivery service.

“With a home delivery service the issue of having small stocks of pharmaceutical drugs would not be noticeable to the end customer” – 66, male, retired, regarding a possible solution for and easier access to pharmaceutical drugs.

While several interviewees focused on the immediate advantages of closing the physical gap between their homes and the pharmacy, others preferred to approach the service potential that community pharmacies could take advantage of.

“By using a pharmacy as the first row within the NHS it is possible to screen major health care issue in a casual way instead of facing the stress involved in a health center visit” – 36 years old, male, technician, regarding the fact that Portuguese pharmacies are underused.

“I believe that there should be a greater interaction between pharmacies and dentists. Allow dentists to access relevant information regarding the therapeutic profile of their patients as well as latest biochemical parameters. It’s very common to face patients that don’t recall their therapeutic profile.” – 24 years old, female, doctor, regarding the lack of information between health professionals.

Lastly it’s crucial to acknowledge the importance still given to personal contact in spite of all the existing technology.

“Even with the implementation of new technologies there is still a need for personal contact” – 38 years old, secretary, regarding the importance of personal contact.

“The internet just by itself is great but for a complete pharmaceutical service the personal contact will remain crucial” – 55, female, artisan, regarding the importance of a complete service offering

“When approaching health issues the personal contact allows for a better perception of the service” – 48 years old, male, banker, regarding the importance of service evaluation.

“Sometimes pharmacy’s staff extra care helps to tackle a major health issue” – 59, male, retired, regarding the importance of the support given by the pharmacists.

As a result, it was possible to acknowledge that desirable outcomes were often grounded on individuals’ perspectives and were deducted from previous service encounters which due to their satisfying or unsatisfying nature left their mark in the interviewees’ approach to service provision within Portuguese community pharmacy.

Grounded on the information gather in the several categories described above, the new service design process is now able to properly engage a customer-driven design while still stimulating a disruptive approach to service innovation (Burger and Ovtcharova 2013). Within the next section of this study, the service prototypes will be presented with the support of the Multilevel Service Design methodology (Patrício, Fisk et al. 2011).

5 New Service Design

Within this section of the presented study, all the data collected through qualitative interviews along with its analysis will be used to design a set of new services able to improve the citizens' access to healthcare through the pharmacy while increasing the scope of pharmaceutical services. The aim is to improve the extend of the service offering available in community pharmacies, presenting an alternative to the current context, while conducting a customer-driven design able to increase the value co-creation happening within and outside of the physical store.

Firstly and foremost, to properly design such set of services it's required to acknowledge the different perspectives that customers have of pharmaceutical services. As exhibited on the previous section, some interviewees considered that the true value of pharmacies was imbued in the provision of pharmaceutical drugs while others considered that a more personalized pharmaceutical care was necessary in order to achieve customer satisfaction. Grounded on these two contrasting perspectives of delivering value within Portuguese community pharmacies, this study proposes an integrated solution that attempts to increase the service provision for both scenarios. The services will be presented individually which will enable a deeper characterization, however these new services should be seen as complementary not only due to their synergy but also due to their potential.

The proposal presented in this study aims at taking advantage of the existing resources within Portuguese community pharmacies (Lapão, Gregório et al. 2013) to implement an online platform able to serve as a new channel between customer and service provider. After establishing a new service interface for the pharmacies to do business in, it's is then possible to enhance such channel with, at least, two new service bundles.

One of the service bundles proposed in this document is the ePharmacare service which has the purpose of increasing the interaction between the community pharmacy and their customers while infusing new ways to provide pharmaceutical care. The other service bundle is the home delivery of pharmaceutical drugs through a remote order increasing the efficiency of the service provision for the end-customer.

Bellow, one may find the detailed characterization of both services through the usage of the Multilevel Service Design (MSD) (Patrício, Fisk et al. 2011) which comprises 6 models for each segment of the service. Initially, each service will display the existing Customer Value Experience adapted to each service. Afterwards and built on the existing models, a Customer Value Constellation will be developed for each service which will present the changed proposed to customer perception. Then the Service Experience will be defined for a service system level, which enable a future in-depth characterization of both services. Later both the Service System Architecture (SSA) and Service System Navigation (SSN) will be revealed for those service bundles. With both the SSA and SSN models, the definition of the Service Encounter Experience is now possible which provides a design background for the development of a Service Experience Blueprint for the most crucial service stage.

5.1 ePharmacare service

The ePharmacare service consists on an existing service concept which focuses on estimating the health gains originated from a consistent integration of pharmaceutical services while assessing the potential of ehealth services within pharmaceutical services (Lapão, Gregório et al. 2013). This service will also embrace the current shift in business innovation and technology development which some pharmacies began to explore by changing their focus from a disease-oriented practice to a patient-oriented practice (Chisholm-Burns, Graff Zivin et al. 2010). In the following sections, the several aspects of this proposed service will be designed according to the MSD methodology (Patrício, Fisk et al. 2011) while featuring the data collected from semi-structured qualitative interviews and its analysis.

The ePharmacare service proceeds to take advantage of the online platform suggested by this document as a way to increase interactions between the pharmacy and its clients. By ensuring these service touchpoints between stakeholders it becomes possible to engage in a patient-oriented practice which can be achieved by monitoring customer's health status while allowing for a more suitable and knowledgeable service provision.

Hence, the service presented bellow aims at satisfying pharmacy customers who established a persistent contact with their regular pharmacy while perceiving value within a personalized and updated provision of pharmaceutical care. The key features associated with this service are the following:

- The customer access to the online platform through either a Computer or a Smartphone/Tablet App (mobile App) which enables a faster and more direct contact with their regular pharmacy. Such allows for a continuous flow of information regarding the customer's pharmaceuticals stock, health status and possible upcoming pharmacy visits.
- A patient profile within the online platform contains information regarding therapeutic profile history and health status history, which is updated after every service touchpoint, incrementing available information along the customer journey. This profile can only be accessed by the selected pharmacy and the customer himself.
- An alert system through the online platform (PC and mobile app), telephone and community pharmacy will allow the flow of updated notifications between the customer and the service provider. Within these alerts, both the clients and pharmacies will be informed about the remaining stock of medicines, changes within health status and scheduled pharmacy visits.
- Customers will also be able to update their own biochemical and physiological parameters through the online platform, thus allowing for a more active patient posture within healthcare. These inputs may trigger the alert systems if suitable.
- Grounded on the available information from previous features, community pharmacies will also be able to enhance their disease management services allowing for improved and more personalized performances while screening for major health issues.
- In an attempt to integrate the pharmacy with the remaining National Healthcare Service (NHS), each community pharmacy could complement their service offering by adding a general practitioner medical insight (through remote consultation) to the already existing pharmaceutical care.

5.1.1 Customer Value Experience

The Customer Value Experience (CVE) for the ePharmacare service can be found in Figure 6 and it shares all but one of its activities with the VCE for the current community pharmacy available in Figure 1. The adjustment occurs in the first step where “health issue” was replaced by “chronic health issue” due to the increased number of pharmacy interactions associated a chronic illness, maximizing the value imbued within the ePharmacare service.

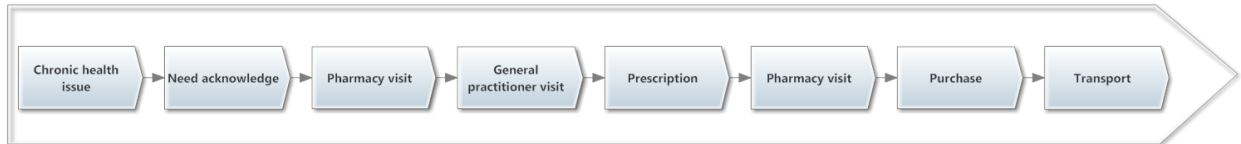


Figure 6 – Customer Value Experience for the ePharmacare service.

5.1.2 Customer Value Constellation

The customer Value Constellation (CVC) follows the definition of activities involved in the VCE for this new service. Upon implementing new features within a service functioning in a community pharmacy, one must consider the changes that such increments may cause to customers’ perspectives. Hence, when designing a new service or upgrading an existing one it becomes vital to update the CVC to exhibit these shifts from a customer point of view.

The CVC for the ePharmacare is displayed in Figure 7 and presents several new elements that somehow increase the complexity of the model. At this stage it’s advised to compare this model with its predecessor (see Figure 3) in order to acknowledge exactly how these new features have an impact in the overall service capabilities.

Among the new additions, the presence of a new internet channel should be perceived as a major milestone which allows both the smartphone interface and the computer interface to establish a connection between customer and service provider. Such connectivity allows for the alert systems to gain instant access to both the user and the pharmacy’s staff increasing the responsiveness of the service itself. Another crucial feature may be found within the mobile app itself as it enables a bridge among the access to patient profile, pharmaceutical counseling, alert systems and the possibility for customer information inputs. Such capabilities will certainly increase the information presence along the different service interfaces within the overall customer journey.

On the pharmacy perspective, the existence of such information flow along with an updated customer profile will enable a more personalize pharmaceutical care which may range from therapeutically management to patient management. The later may be achieved through a regular patient follow up grounded on in-depth disease management paired with insightful medical counseling.

In an attempt to feature the upcoming usage of e-prescription within Portuguese National Healthcare System, a remote consultation option is also present within the ePharmacare’s CVC. Such service attribute may open the possibility for remote general practitioner consultations within the community pharmacy for some predefined health issues which might save customers’ time while avoiding possible stressful journeys to the local health center as exhibited within the “Analyzing Customer Journey” section.

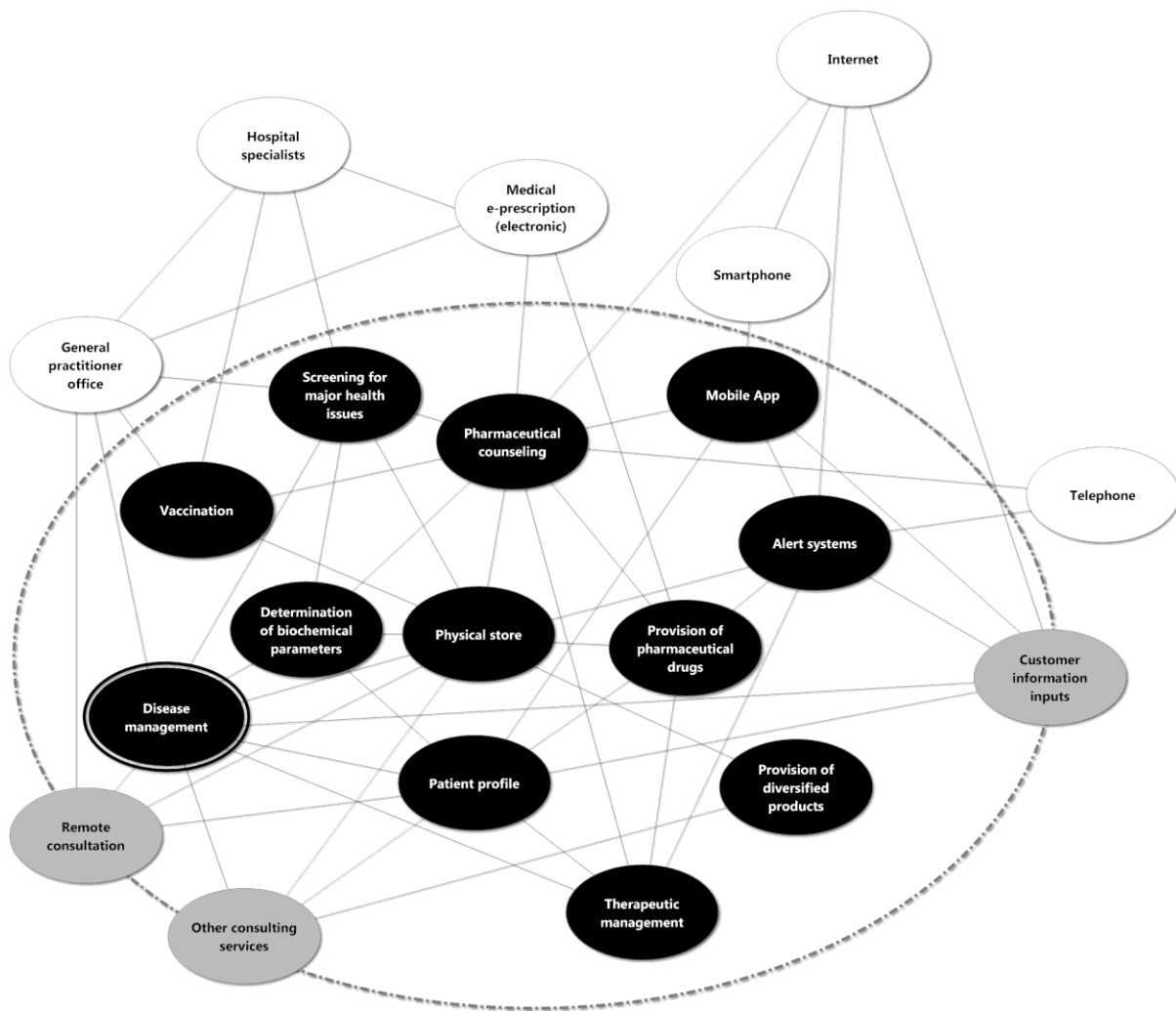


Figure 7 – Customer Value Constellation for the ePharmacare service.

5.1.3 Service Experience

The Service Experience stage within MSD, focuses on some key aspects of the service provision and experience across interfaces where some opportunities may exist to enhance the overall service offering.

The chosen focus for the ePharmacare service within the net of activities involving the community pharmacy will in comprise all steps from “need acknowledgement” to “purchase” from the CVE presented in Figure 6. This focus will allow an in-depth characterization of the service in the key aspects that may alter customer perception and ultimately increase value co-creation between service stakeholders.

The Service Experience for the ePharmacare service is exhibited in Figure 8, and was built on the CVE model. While some key aspects are still present such as the “pharmacy visit” and the “purchase/provision of pharmaceutical drugs” other actions were incremented to the activity flow, for instance: “alert systems”, “therapeutic management”, “disease management” and “remote physician consultation”. These additions aim at enhancing the available services within community pharmacy while maximizing the existing resources.

5.1.4 Service System Architecture

Following the service design scope defined in the Service Experience model, this study now presents the Service System Architecture (SSA) and Service System Navigation (SSN) models in an attempt to characterize the several possibilities within the ePharmacare service. The SSA represented in Figure 9 focuses on the activities performed throughout the different interfaces and stakeholders that comprise the ePharmacare service.

When attempting to perceive how the ePharmacare service differentiates itself from the existing service, one may find helpful a model comparison between this proposed version and the current version exhibited in Figure 5 (AS-IS model).

5.1.5 Service System Navigation

After establishing the desired SSA it becomes now conceivable to develop the Service System Navigation (SSN) for the ePharmacare service. While the SSA model expresses a rather static perspective of the service offering, the SSN offers a dynamic view for the service provision with several interface and service options that a customer may or may not experience. For this study, both the physical store and smartphone interfaces were selected to be present within the MSD models in an attempt to highlight the complementary nature of technology and personal contact in the ePharmacare service. While the SSN describing the smartphone interface may be found in Figure 10, the SSN associated with the physical store interface is located in Appendix D.

5.1.6 Service Encounter Experience

The Service Encounter Experience (SEE) attempts to go one step further than the Service Experience model (see Figure 8) by focusing on the disease management stage of the ePharmacare service which will then enable the development of the Service Experience Blueprint (SEB) for that exact stage. Bellow, in Figure 11, the SEE model highlights 6 key activities which play a crucial role within the disease management phase of the ePharmacare service allowing to define where and how value may be co-created between stakeholders. The remaining SEE models for the ePharmacare service are located in Appendix E, Appendix F and Appendix G.

5.1.7 Service Experience Blueprint

The Service Experience Blueprint (SEB) represents the last and most detailed model in MSD and focuses on key elements within the value co-creation process. After defining the SSA, SSN and SEE models, it's now possible to approach the development of SEB models which excel at mapping the actions of the different service stakeholder along with their assigned responsibilities.

Through the SEB methodology, one may design specific details of the service provision while maintaining a holistic perspective of the service itself, positively contributing for the development of consistent service experiences across different channels/interfaces. The SEB for disease management through a smartphone interface is presented in Figure 12 and aims at clarifying the true capabilities imbued in this segment of the ePharmacare service. One may also find the remaining ePharmacare service SEB models within Appendix H, Appendix I, Appendix J and Appendix K.

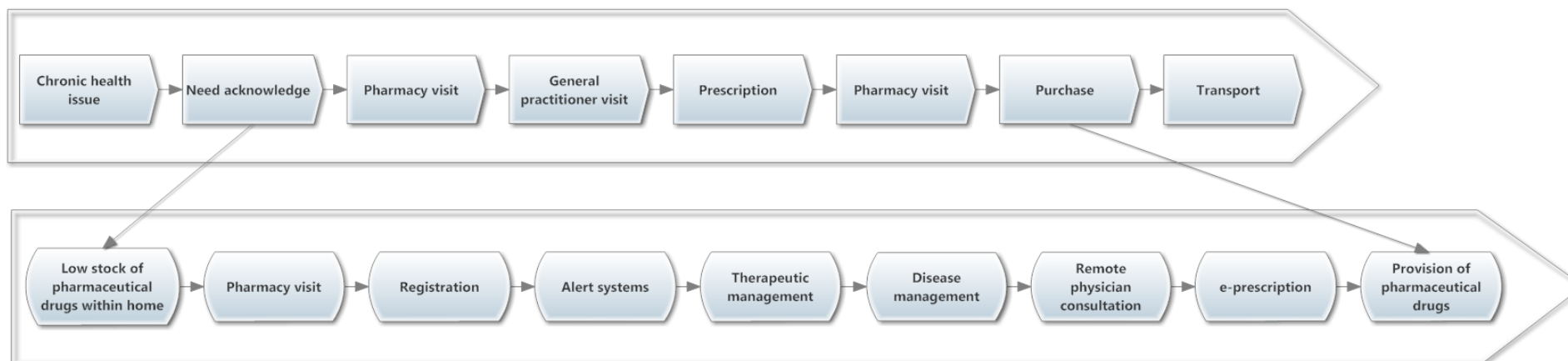


Figure 8 – Service Experience for the ePharmicare service.

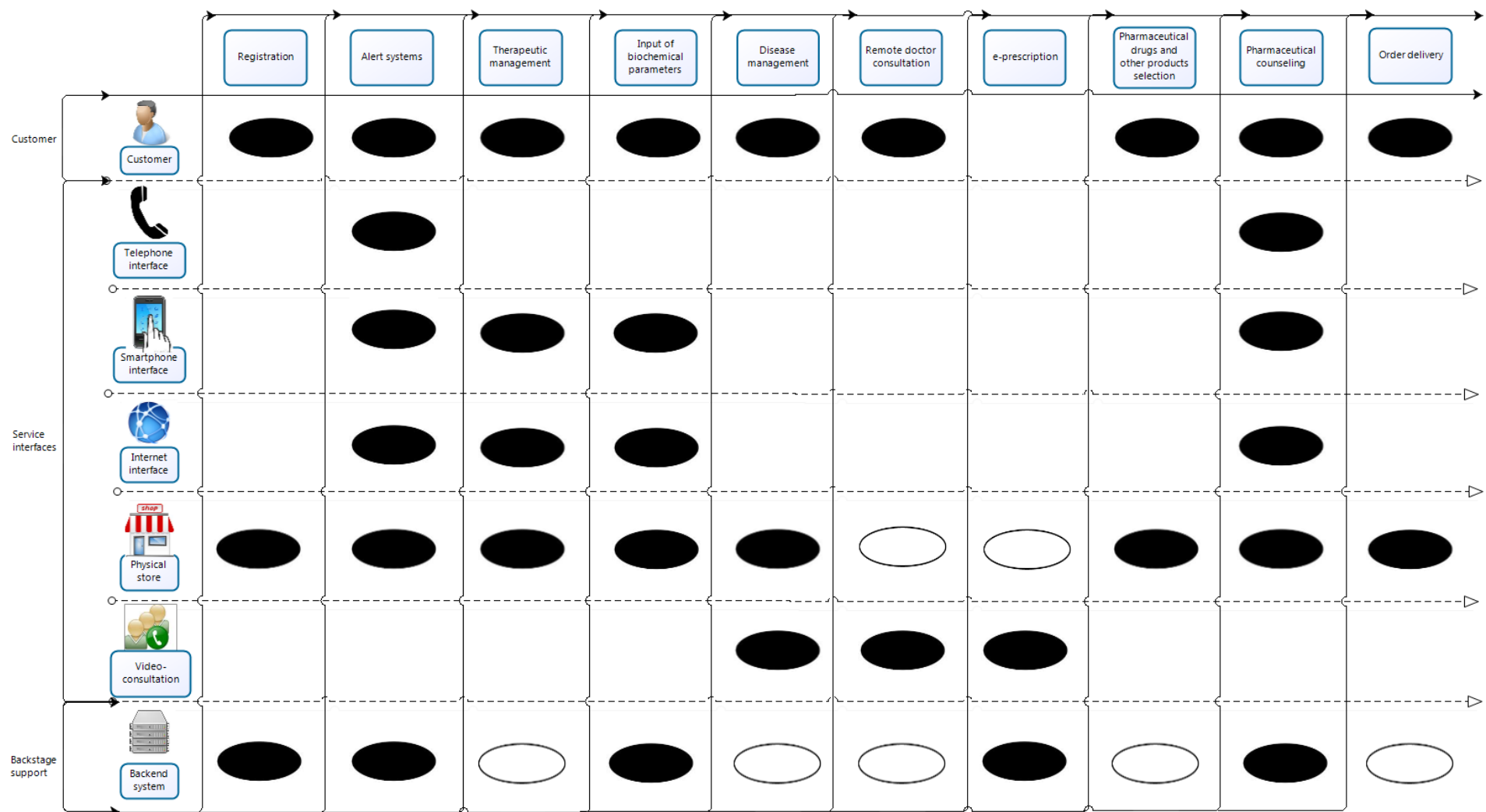


Figure 9 – Service System Architecture for the ePharmacare service.

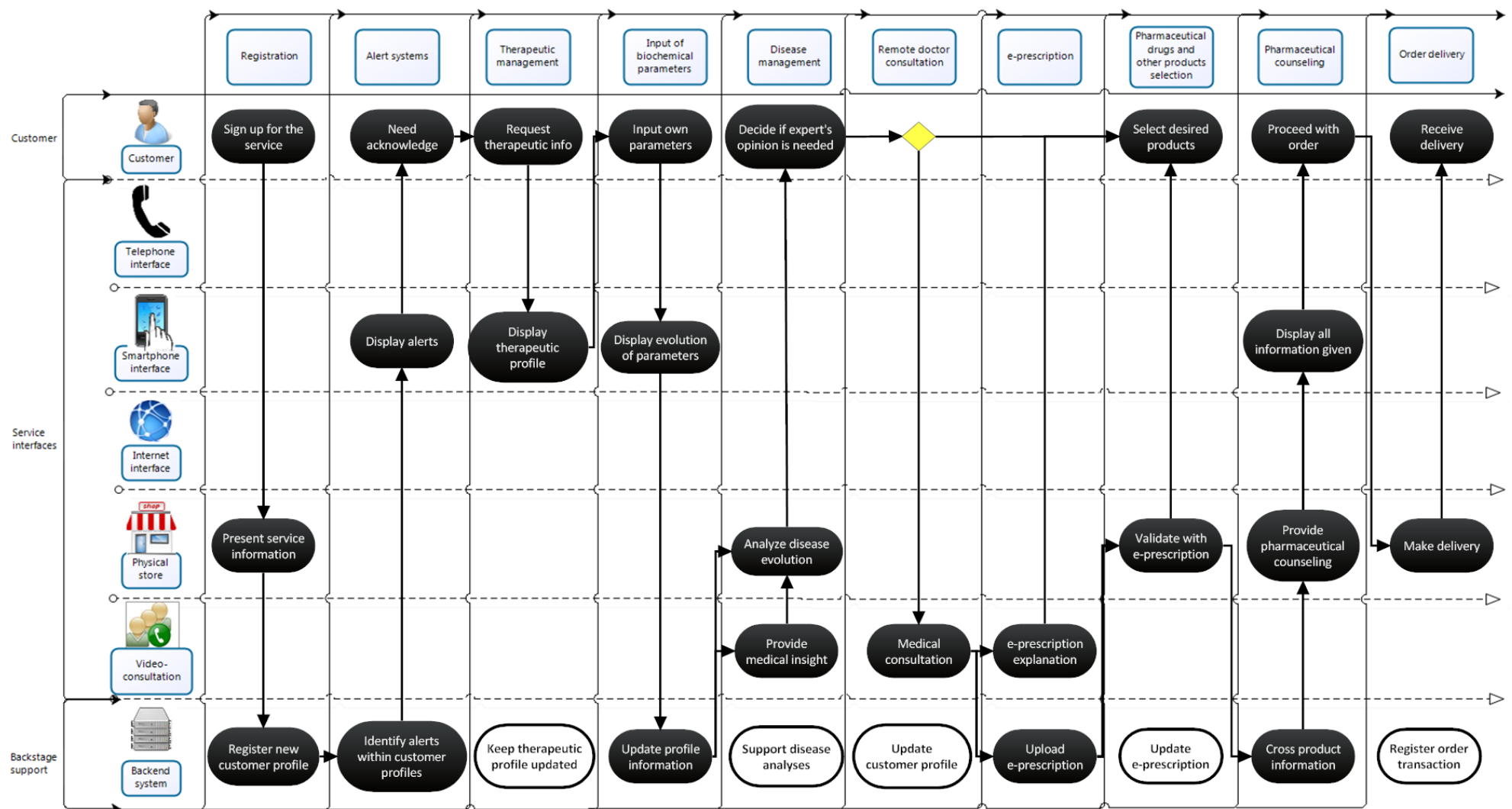


Figure 10 – Service System Navigation for the smartphone interface of the ePharmacare service.

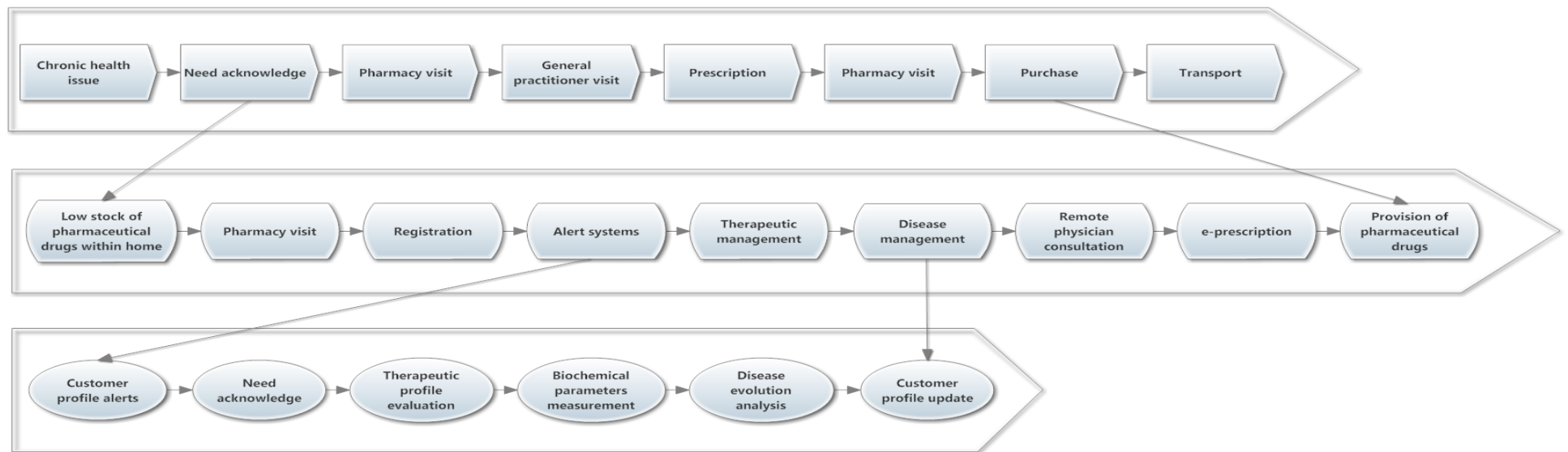


Figure 11 – Service Encounter Experience for the disease management stage within the ePharmicare service.

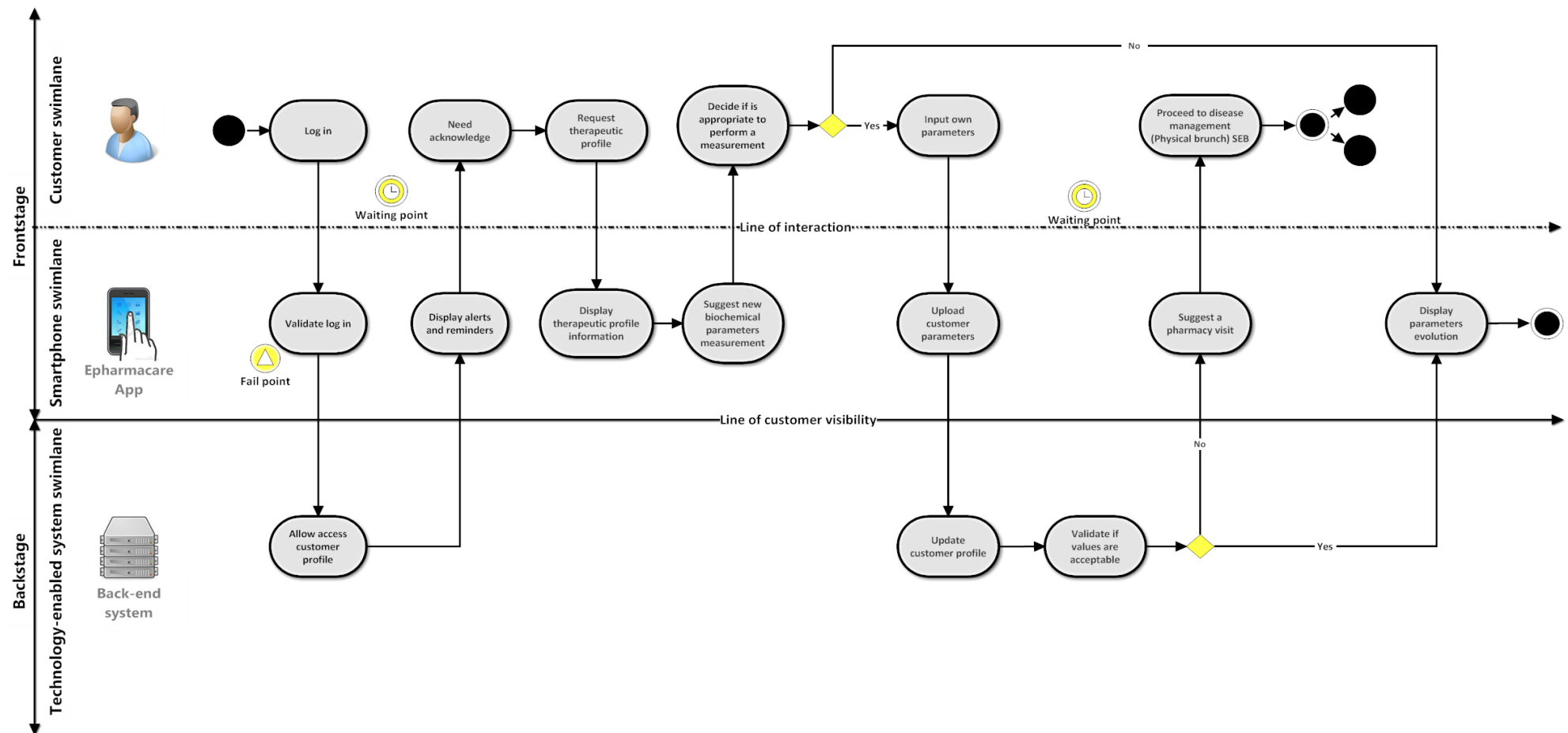


Figure 12 – Service Experience Blueprint for the disease management stage within the ePharmacare service (smartphone interface).

5.2 Home delivery service

The home delivery service aims at enhancing the community pharmacy service offering by shortening the gap between service provider and customer in the provision of pharmaceutical drugs. In order to achieve that, data collected throughout the interviews will play a crucial role in service design and service innovation.

Like the presented ePharmacare service, this home delivery service also focuses in harvesting the benefits laying within an online platform in order to increase customer satisfaction. However, the home delivery will attempt to increase the efficiency associated with the provision of products whereas the ePharmacare focuses on enhancing the effectiveness related with the provision of pharmaceutical care. Although these proposed services approach different contexts of the service provision, they should be seen as complementary of each other, targeting customer satisfaction across the different service interfaces.

The implementation of a home delivery service focuses in satisfying not only customers who perceive the community pharmacy as medicine retailer but also clients who consider the trip involved with a pharmacy visit as a barrier in the service provision. Some key elements present within the service are presented below:

- Customer access to an online platform through either a Computer or a Smartphone/Tablet App (mobile app) which allows the customer to better perceive the pharmacy's value proposition while enhancing the information flow between stakeholders.
- The possibility of signing in through different interfaces and perform a purchase order without a visit to the physical store. Such order may include pharmaceutical drugs and other diversified products and will be accompanied with a suitable pharmaceutical counseling based on the order details.
- Take advantage of the benefits associated with the e-prescription within the remote order stage, increasing both the safety and consistency of the provision of pharmaceutical drugs.
- Empower the client to decide where and when the provision of pharmaceutical drugs will take place while avoiding unwanted service touchpoints.

5.2.1 Customer Value Experience

The development of the home delivery service will be grounded on the existing Customer Value Experience (CVE) model which is exhibited in Figure 1. From this model it will be possible to highlight the possibilities identified through this study and proceed to the later stages of the MSD.

5.2.2 Customer Value Constellation

Upon briefly describing the service, it's now appropriate to acknowledge how this service will modify the existing Customer Value Constellation (CVC) for provision of pharmaceutical drugs (see Figure 2).

Similarly to the ePharmacare service, the inclusion of an internet channel has drastically modified the CVC model while broadening the service capabilities. The vital feature added by

this model is the option of a remote order which will follow a sign-in activity to strength the safety of the service provision. Such sign-in phase can be performed online (through a computer or a smartphone), by telephone or personally within the physical store. After validating the identity of the user, it is now possible to select the several option associated with the service delivery such as products, dates, location and participants. The implementation of a logistics company as a partner within this service serves as a support for situations where the pharmacy staff is unable to satisfy a customer request either due to distance associated with the order or due to the lack of personnel to perform the task.

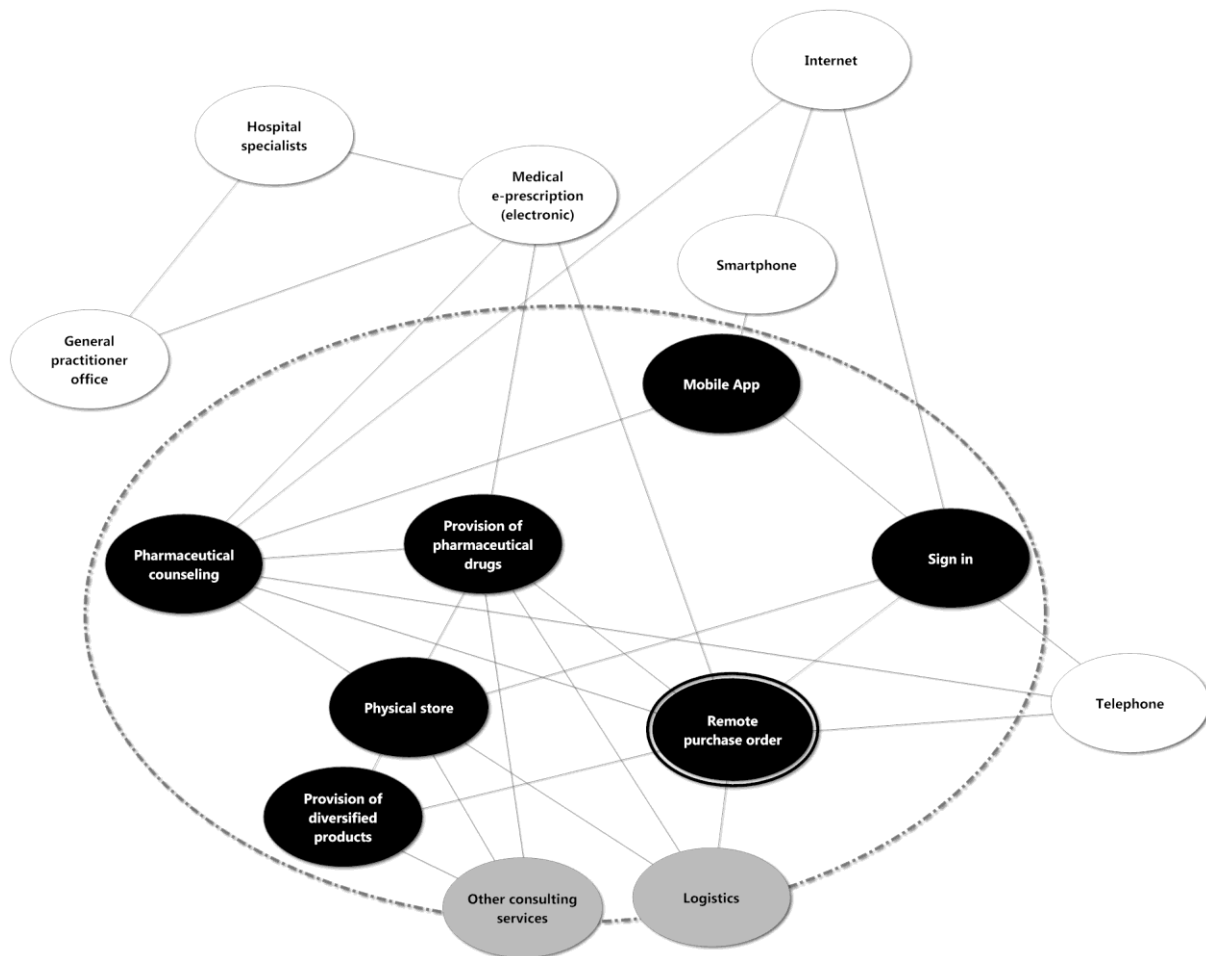


Figure 13 – Customer Value Constellation for the home delivery service.

5.2.3 Service Experience

After acknowledging the existing CVE model and the presented CVC model for the home delivery service, it's now possible to define the scope of the new service along the flow of activities which characterize the provision of pharmaceutical drugs.

The Service Experience model for the home delivery service is presented in Figure 14 and now features several new activities such as “registration” and “sign-in” which will enable the customers to select the service delivery options. Along with the access steps, order selection and payment activities were also implemented in additional channels increasing the flexibility of the proposed service. Lastly, the “transport” previously done by the customer could now be replaced by the pharmacy staff or an associated logistic firm depending on the client's preference.

5.2.4 Service System Architecture

After the definition of the Service Experience for the home delivery service, the MSD methodology approaches the development of the Service System Architecture (SSA) model regarding the proposed service. The SSA model will offer a more visual display of the activities selected in the Service Experience model while providing additional details regarding the role of the different stakeholders.

Below, in Figure 15, the SSA for the home delivery service is presented which comprises the several participants and their assigned activities. The green “plus” signs existing within the model refer to capabilities that will not be present in the early versions of the service due to security and process constraints but could represent valuable future increments for the service stakeholders.

5.2.5 Service System Navigation

Following the SSA model, the Service System Navigation (SSN) may now be developed to which will complement the structure given by the SAA model and enhance the characterization of the service concept. The SSN provides an intuitive approach to the overall service and will empower the following stages of the MSD which will focus on sections present within this model.

In order to somehow complement the interfaces chosen for the SSN models within the ePharmacare service, the internet channel and telephone channel will be approached for the home delivery service. Such decision will allow to explore the new channel supported by the online platform while understanding if there is an opportunity present within the telephone interface. In Figure 16 the SSN containing the internet interface for the home delivery service is displayed while the SSN covering the telephone interface for the same service can be accessed in Appendix L.

5.2.6 Service Encounter Experience

Upon developing the SSA and SSN models, the service design may now go into further detail on some specific stages of the home delivery service. In order to do so, the Service Encounter Experience (SEE) models will be used to grant a more comprehensive perspective of the service which will then enable the development of SEB models.

For this section, the order selection stage was chosen which comprises 7 key activities. The remaining SEE models are displayed in Appendix M and Appendix N of this document.

5.2.7 Service Experience Blueprint

To conclude the MSD methodology, the Service Experience Blueprint (SEB) model will now be assembled with the intent of providing insightful and in-depth information regarding the several service stages which combined, form the home delivery service. Using the SEE model presented above (see Figure 17) it is now possible to highlight how the designated activities shall be performed in the context of service provision while maintaining an holistic perspective of the overall service offering.

The SEB model presented in Figure 18 features the order selection stage of the home delivery service and allows for an holistic perspective of the overall service provision. The remaining SEB models for the registration stage and for the delivery phase of the proposed service are exhibited in Appendix O and Appendix P.

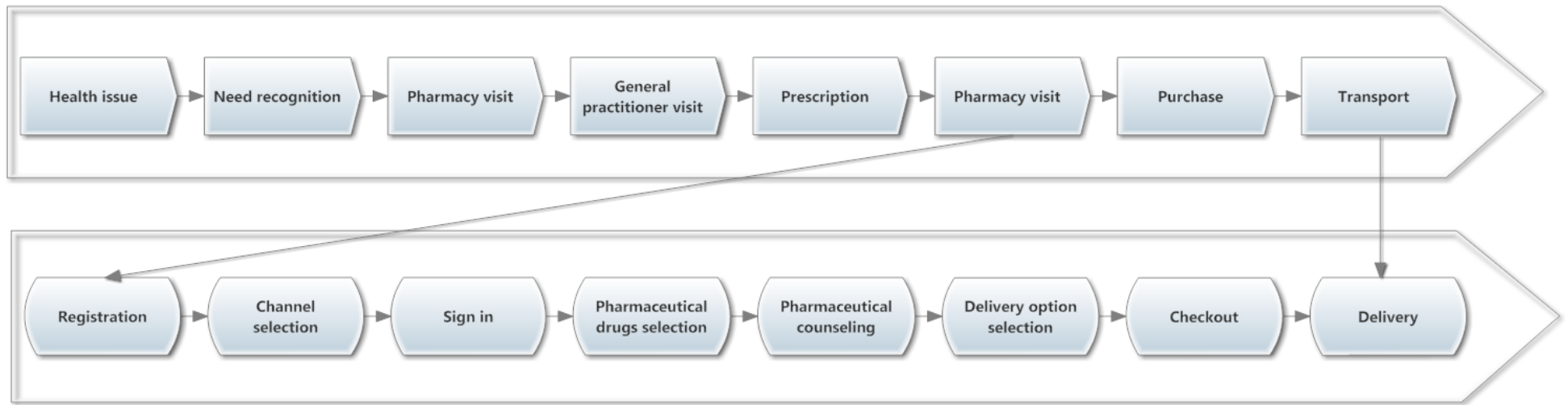


Figure 14 – Service Experience for the home delivery service.

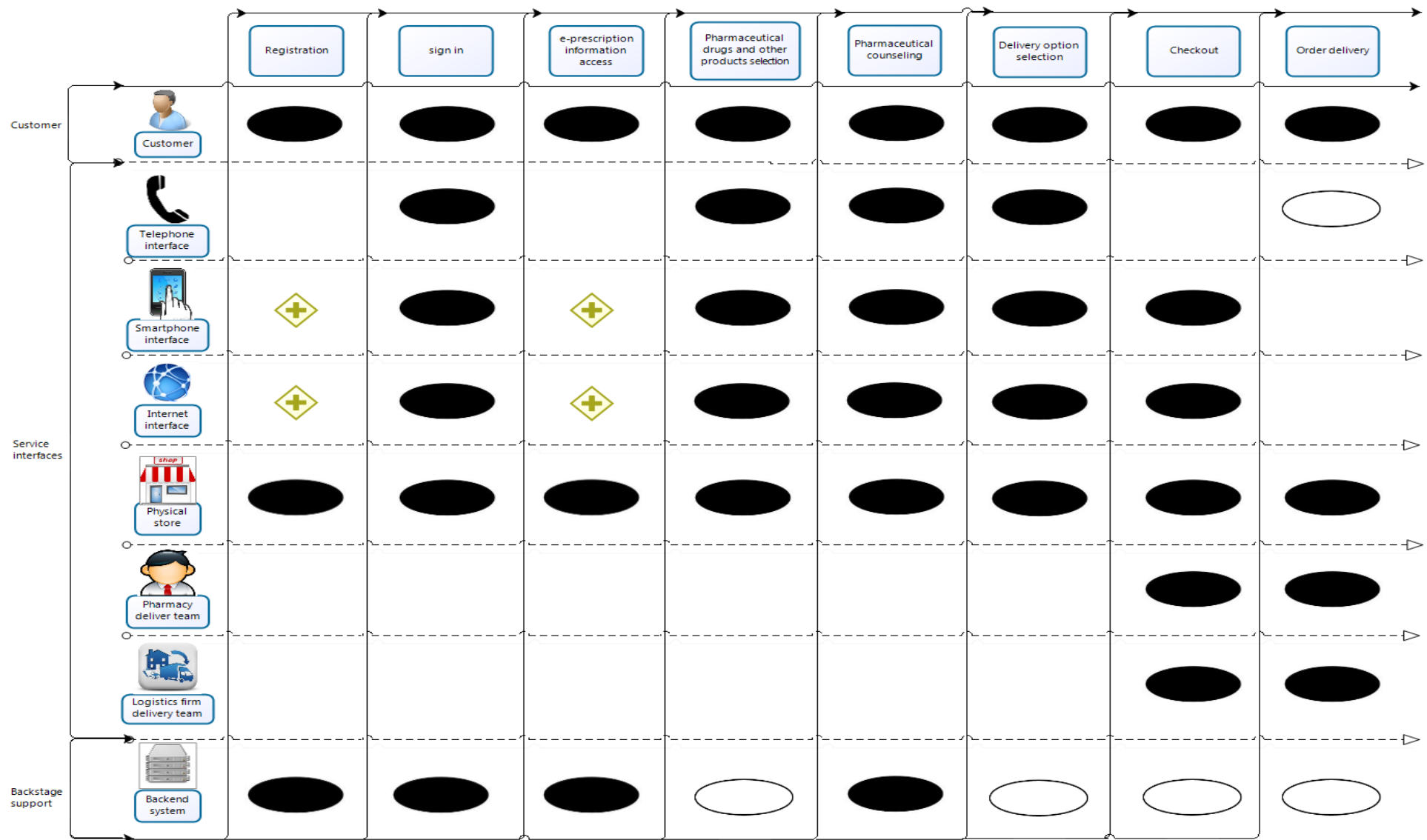


Figure 15 – Service System Architecture for the home delivery service.

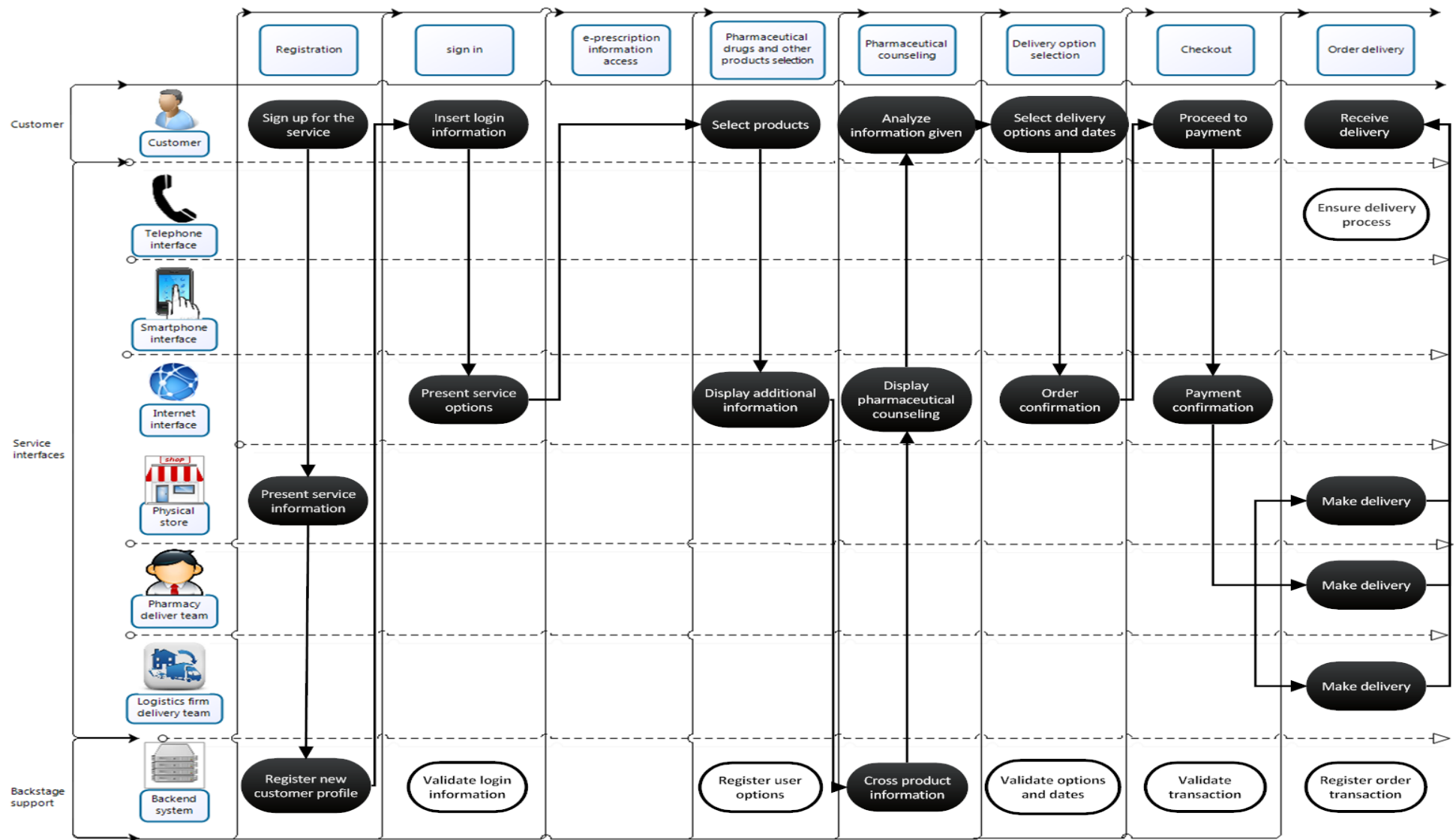


Figure 16 – Service System Navigation for the internet interface of the home delivery service.

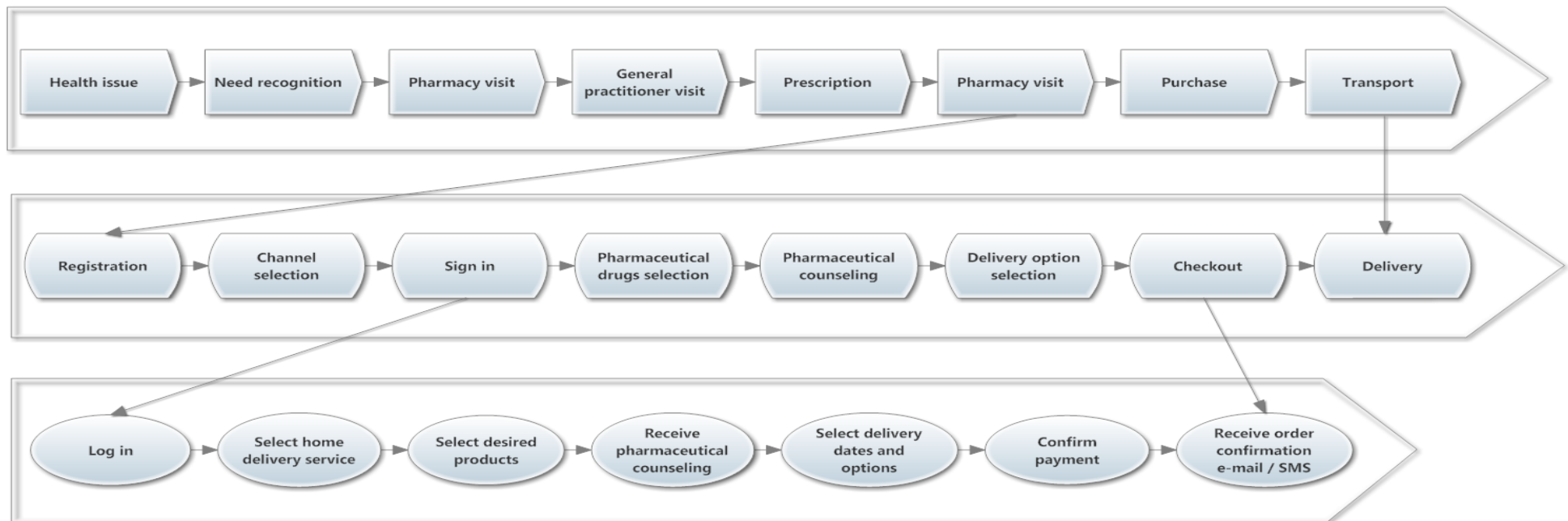


Figure 17 – Service Encounter Experience for the order selection stage within the home delivery service.

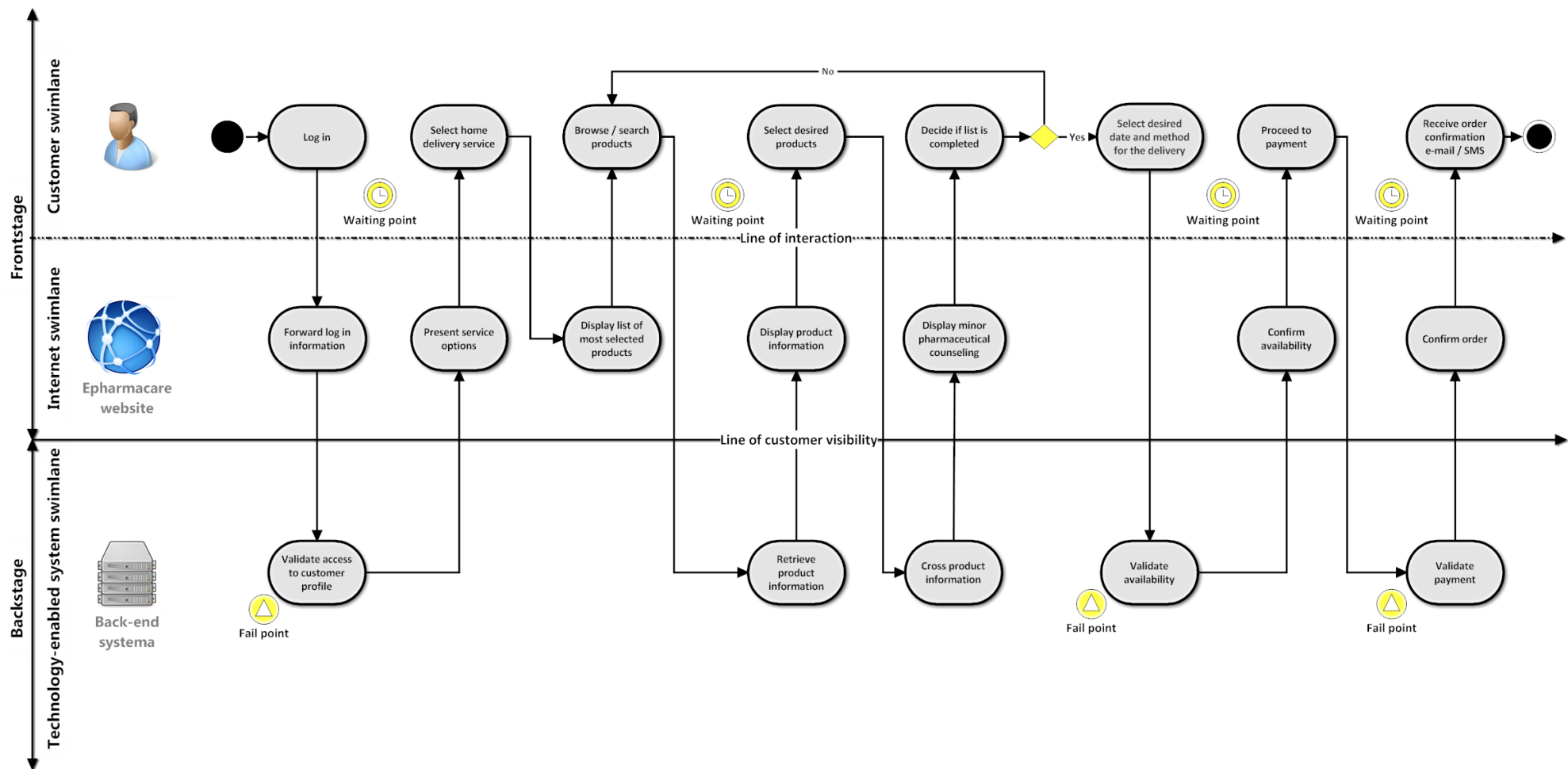


Figure 17 – Service Experience Blueprint for the order selection stage within the home delivery service (internet interface).

6 Discussion

From the results presented when analyzing the customer journey, it's possible to confirm that there are indeed some perception gaps between community pharmacies and their customers. Upon presenting both the ePharmacare and the home delivery services, it's now possible to assess their strengths and weaknesses while associating results in this document with related literature. By collecting customer feedback using qualitative interviews while harvesting the health professionals perspective through focus groups, this document aims at complementing the assessment of the Portuguese community pharmacies (Lapão, Gregório et al. 2013) empowering the development of new pharmaceutical services.

Firstly and foremost, it's important to assess customer perception associated to the internet capabilities and how this channel was considered to be inadequate and underused through the semi-structured interviews. When tackling this issue it's equally vital to acknowledge that a recent study suggests that Portuguese community pharmacies actually possess on average 2,5 computers per pharmacist which in 90% of the cases allows the access to health information resources on the internet (Lapão, Gregório et al. 2013). Such data indicates that Portuguese pharmacies have the potential and resources to develop an internet channel able to support several service interfaces while answering an existing customer need which should have a positive impact in customer satisfaction.

Such technological shift in the provision of pharmaceutical care is aligned with emerging trends which suggests that the scope of pharmaceutical services is no longer restrained to the physical environment of the community pharmacy (Castelino, Bajorek et al. 2011) enabling the development of new service options such as the ePharmacare and the home delivery services. This change within pharmaceutical services is complemented with new health tendencies which proposes a patient-oriented practice performed within community pharmacies, thus contrasting with the existent disease-oriented paradigm (Chisholm-Burns, Graff Zivin et al. 2010). As in several other healthcare professions, pharmacists' true societal power is located in the relationship between the service provision and the users, and it's within this touchpoint that an enriched value co-creation can occur (Abu-Omar, Weiss et al. 2000).

The ePharmacare service proposed in this document focuses on taking advantage of these approaches to the pharmaceutical services while incorporating technology within the service provision, stimulating customers to adopt a more active role within the value co-creation process. Pharmacist are ideally positioned to perform a primary healthcare role and such aspect has so far been associated with some sort of counterbalancing perceived deficiencies from other healthcare professionals (Cavaco, Dias et al. 2005). Features present within the ePharmacare service not only empower pharmacist to excel in their competences but also simplifies service integrations within the National Healthcare System. Through an updated profile, pharmacists are able to successfully perform a therapeutically management while keeping track of upcoming provision of pharmaceutical drugs. This data not only enables a more personalized pharmaceutical care and perhaps marketing, but also allows a more effective and efficient control of the pharmaceutical drug stock within community pharmacies, contributing for a decrease in the documented lack of pharmaceutical drugs within Portuguese community pharmacies (Barros, Martins et al. 2012).

The home delivery service acts as a physical gap closer between customers and community pharmacies when addressing the provision of pharmaceutical drugs. With this service, clients are empowered to define where, when and how the service provision takes place along with who are the participants in such stage. Unlike the unsuccessful Farma 24 delivery service (TSF 2001), implemented by the national pharmacy association (ANF) in 2001, which took advantage of the telephone interface to perform the order selection, the proposed home delivery service in this document takes advantage of both the telephone and internet interfaces and has a special focus on the existing resources within the pharmacy. The Farma 24 service had a constant service fee of 5€ which would be applied even if the customer was located 20m away from the pharmacy, this service did not contemplate the personnel resources existing within the pharmacies which could easily do the scenario mentioned above, free of charge. Besides enabling pharmacies to define if they possess resources to perform the service with their own staff, the proposed home delivery service will also take advantage of the upcoming implementation of the electronic prescription, thus providing consistency to the service performed through the online platform.

By presenting these service proposals within a focus group environment, this study focused on evaluating the proposed service concepts before these could be implemented and further tested within Portuguese community pharmacies. Throughout the focus group several MSD models were exhibited with the intent of accurately describing every step involving the service provision, which enabled the research participants to provide feedback in an informed and insightful way.

Within the focus group, the context and setting regarding the remote physician consultation was considered to be a major concern due to the existence of a physical gap between the patient and the health professional. The remote physician consultation can indeed be a vital tool to increase the synergy between separate entities within the National Health System but should be applied in concrete scenarios where value can be delivered in spite of the physical gap between stakeholders while ensuring excellence within the provision of healthcare (Erni and Ruggli 2013). Moreover, and grounded on the feedback from the focus group, the remote consultation would greatly benefit from the involvement of family physicians when possible. This setting could increase both the presence of information within patient care and the health benefits associated with this service, while highlighting an emerging cooperative process between health professionals. Such approach could ultimately enhance and stimulate the paradigm shift from a disease-oriented practice to a patient-oriented practice (Chisholm-Burns, Graff Zivin et al. 2010).

The existence of a patient profile was another issue addressed within the focus group as participants expressed their uncertainties regarding who had access to what patient information. Although most of the research participants agreed on the benefits caused by an increase of patient data throughout National Healthcare System, these individuals also stated that patient profile data should be categorized, thus, only enabling the access to necessary info. One way of achieve such is by categorizing patient information in several bundles which could then be allocated depending on requirements.

Regarding the active stance that ePharmacare service participants are expected to have, several individuals within the focus group suggested a monthly trip to the pharmacy to ensure that the data being uploaded by customers was accurate. Such pharmacy trip can also stimulate additional analysis to properly understand the customer's health status and act as a routine screening activity.

7 Conclusion

By collecting data through qualitative interviews in hospitals and health centers of Lisbon and Oporto, this study aimed at assessing the different customers' perspectives regarding the services available within Portuguese community pharmacies. Throughout this document, such feedback assisted in the identification of the several activities that constitute the current service provision in the different service interfaces. This dissertation actively contributes to the characterization of the existing service offering within Portuguese community pharmacies by taking advantage of the Multilevel Service Design (MSD) models to present the service provision in a detailed and insightful manner.

Upon understanding the how and through what means pharmacies deliver value to their customers, this study successfully approached a customer-driven design, identifying what features have positive and negative impacts in customers' experiences. Only then it was possible to assemble and analyze the collected data in order to propose services able to enhance the overall service offering while attempting to increase customer loyalty.

Both the ePharmacare and the home delivery services appear as proposed solutions integrated within an online platform, which focus on the contrasting perceptions of the role of the community pharmacy. The ePharmacare service attempts to provide a more personalized pharmaceutical care, using technology as a tool to improve customer access to information while stimulating an active posture. Alternatively, the home delivery service aims at closing the physical gap, associated with the provision of pharmaceutical drugs, between customers and community pharmacies.

Through a focus group with health professionals, this study sought an evaluation of the proposed services while acknowledging the different perspectives of the community pharmacy. When developing healthcare services, the input provided by other stakeholders within the National Healthcare System should be taken into account in order to ensure a successful integration of services improving the touchpoints that define the customer journey.

To conclude, the research goals were met as it was possible to not only clarify the role of community pharmacies but also propose service solutions able to take advantage of existing resources and know-how while improving the scope of pharmaceutical services in a holistic manner. Furthermore, by approaching a sector with a documented financial struggle, this study is able to develop customer-driven services which then allows for a higher differentiation of service offerings among community pharmacies which, hopefully, may lead to the creation of competitive advantages for the early service adopters.

Regarding possible future work, a quantitative analysis targeting the assessment of Customer Experience Requirements should be performed, enabling the development of a Goal-Oriented Analysis. Both of these stages will strengthen the proposed prototypes exhibited within this document while positively contributing for broadening the scope of the Multilevel Service Design methodology.

It's equally important to carry out the Design Science Research methodology within the ePharmacare project and proceed to the demonstration and evaluation phases within Portuguese community pharmacies. Within these two major stages that precede the communication phase, usability tests may prove to be invaluable towards the proper assessment of the value co-creation process.

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Appendix A: Interview script.

Section 1: Demographic information:

☐ Age ☐ Gender ☐ Occupation

Section 2: Mapping the activities involved in a service experience:

- How often do you visit a community pharmacy?
- Can you express what motives cause a pharmacy visit?
- Please describe step by step your trip to the pharmacy (i.e. how do you know that you need to visit a pharmacy).
- How do you interact with your pharmacy (i.e. channels used).
- Is there any issue that you identified on the process of visiting a pharmacy?

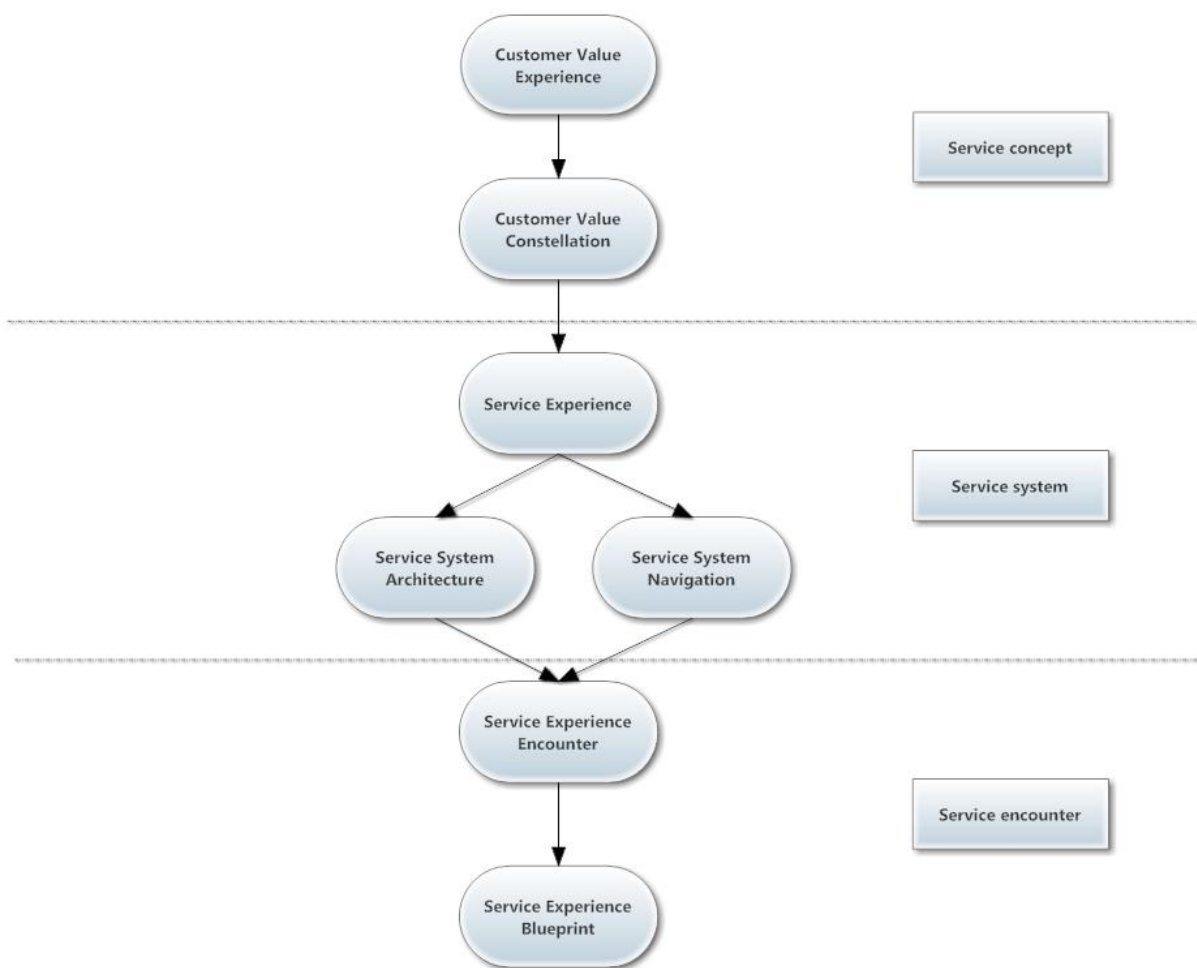
Section 3: Documenting the current service offering:

- What is the role of the community pharmacy in your life?
- What services do you take part of within a community pharmacy?
 - What is the degree of satisfaction associated with such services?
 - Do you propose any improvements for such services?
- What new services would you like to be implemented within community pharmacies?
 - Would these services have a positive impact in your service experience?

Section 4: Understanding the service experience:

- What are the most crucial factors that influence the selection of a pharmacy?
- Do you have a regular pharmacy?
 - What distance is this pharmacy located from your home/workplace?
 - Do you suggest improvements for this pharmacy?
- What reasons have caused you to be unsatisfied with the service provided in a pharmacy?
 - What could be done to avoid such situations?
- How do you see community pharmacies in 20 years?

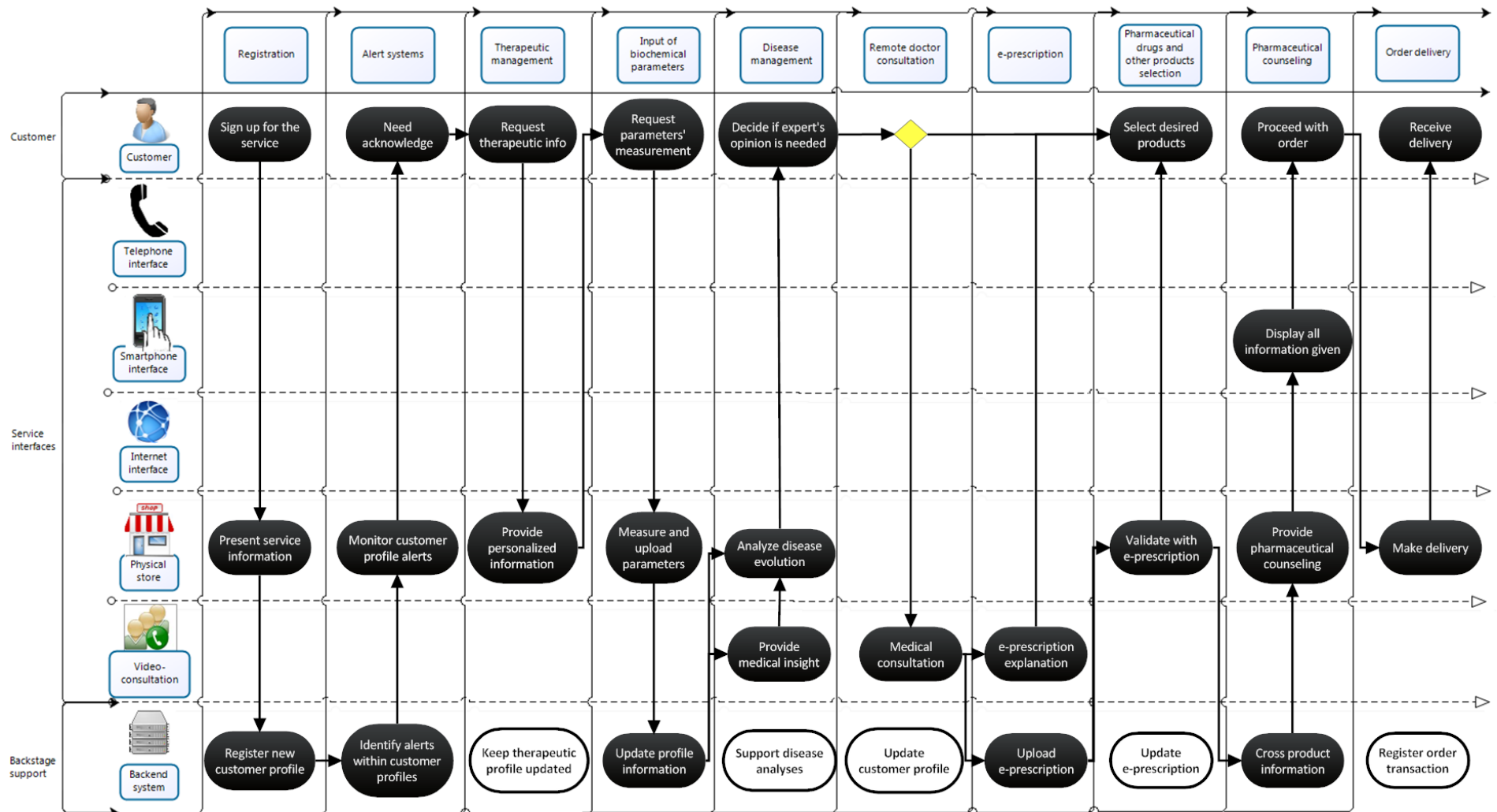
Appendix B: Scheme of models used throughout the MSD methodology.



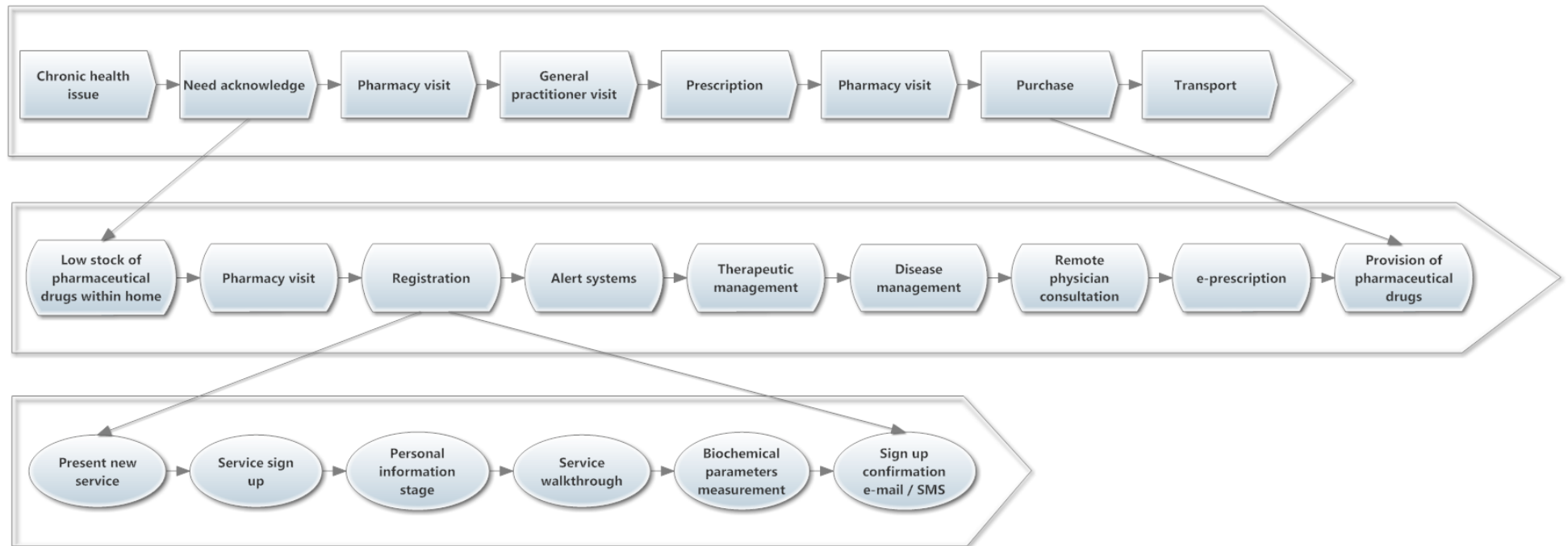
Appendix C: Sample socio-demographic information.

	Female (n = 26)	Male (n = 24)	Aggregate % (n=50)
Age groups			
18-29	6	4	20%
30-39	5	5	40%
40-49	3	7	60%
50-59	6	4	80%
60+	6	4	100%
Employment			
Actor	1	0	2%
Banking	0	1	4%
Engineer	0	3	10%
Technician	2	4	22%
Marketing intern	1	0	24%
Doctor	1	0	26%
Musician	0	2	30%
Nurse	3	0	36%
Professor	2	3	46%
Private security	0	1	48%
Retired	5	4	66%
Secretary	3	0	72%
Show business	1	0	74%
Salesperson	0	1	76%
Student	4	1	86%
Taxi driver	0	1	88%
Tourism	0	1	90%
Unemployed	3	2	100%
No. of pharmacy visits			
Once a week	2	2	8%
Twice a month	6	4	28%
Once a month	10	7	62%
Once every 2 months	3	2	72%
Once every 3 months	5	9	100%

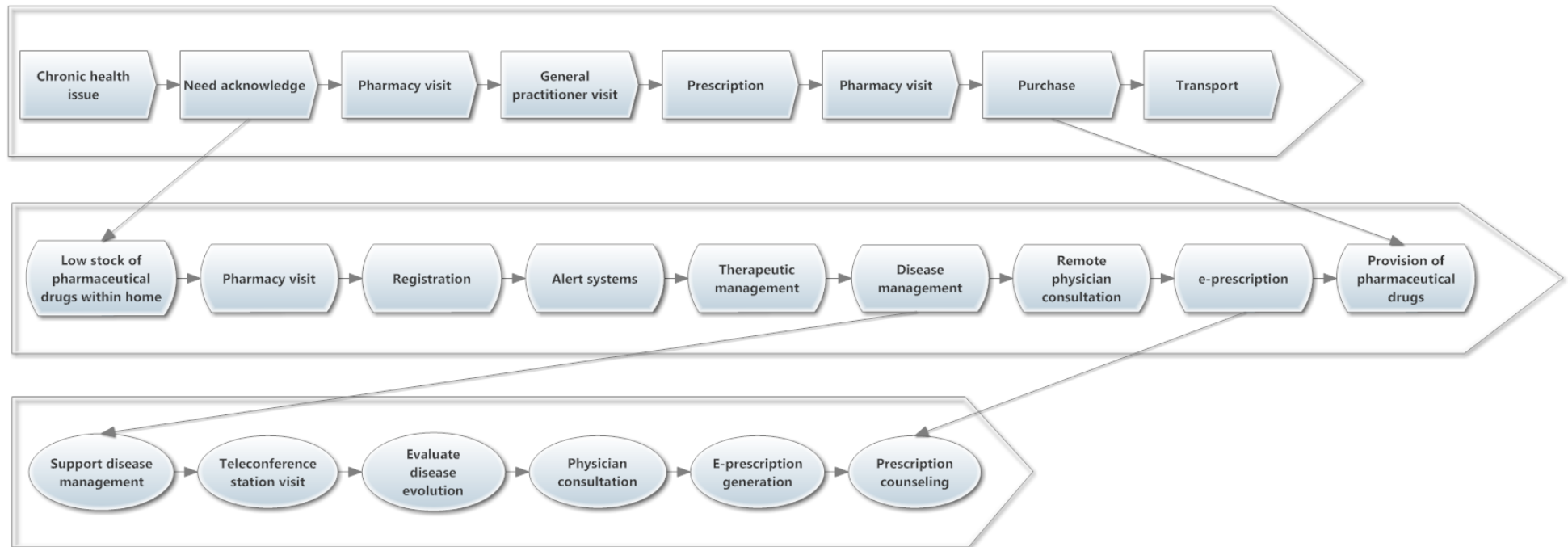
Appendix D: Service System Navigation for the physical store interface of the ePharmacare service.



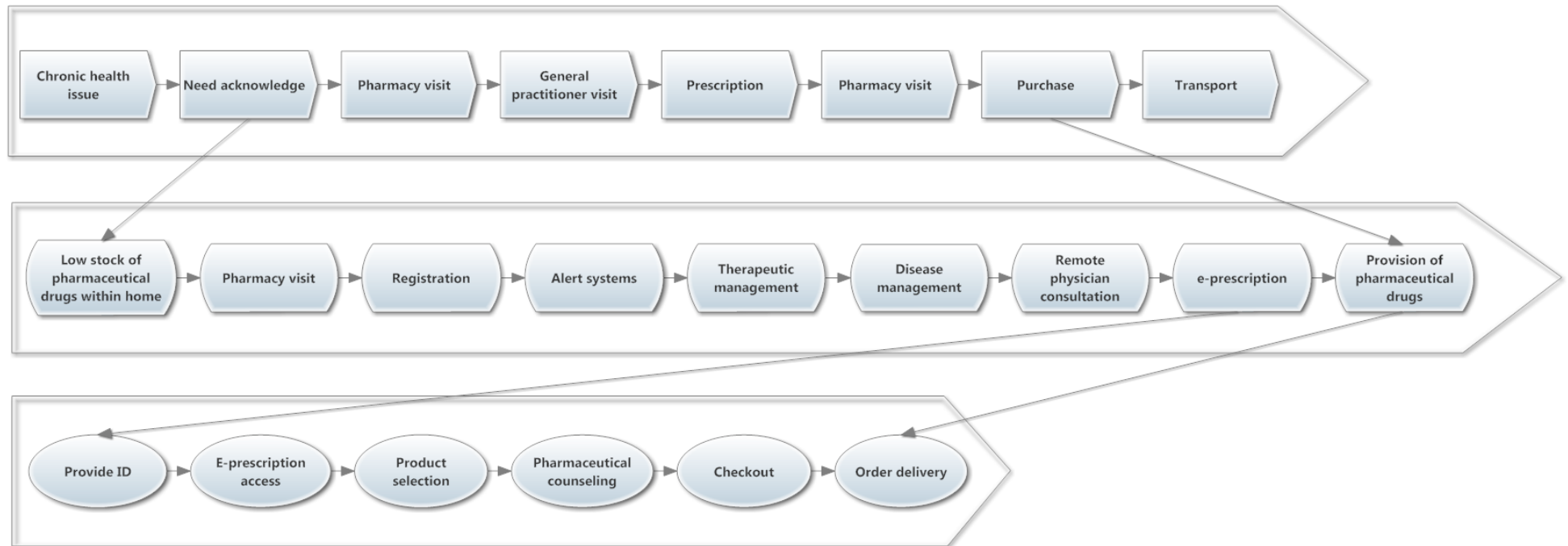
Appendix E: Service Encounter Experience for the registration stage within the ePharmacare service.



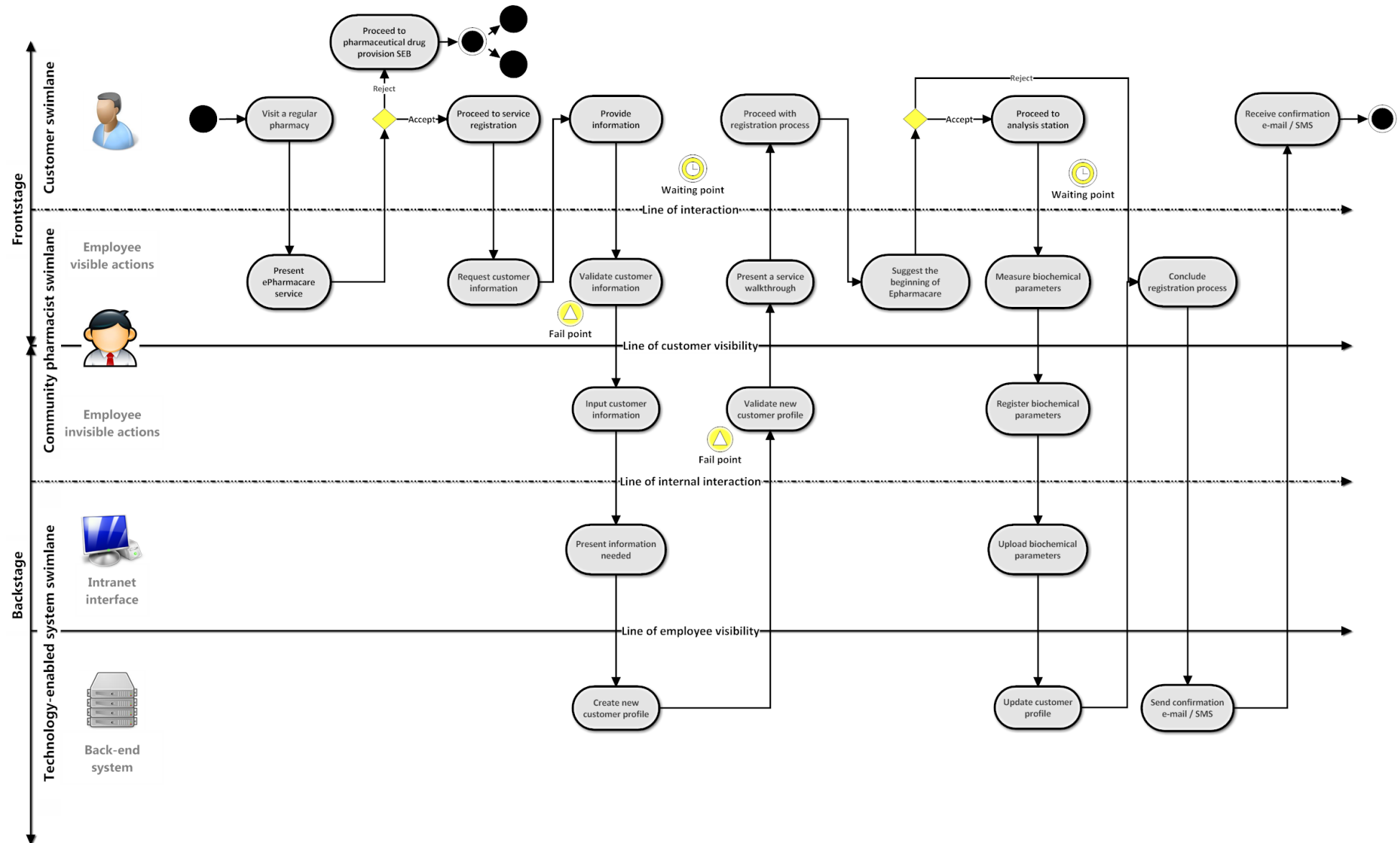
Appendix F: Service Encounter Experience for the remote physician consultation within the ePharmacare service.



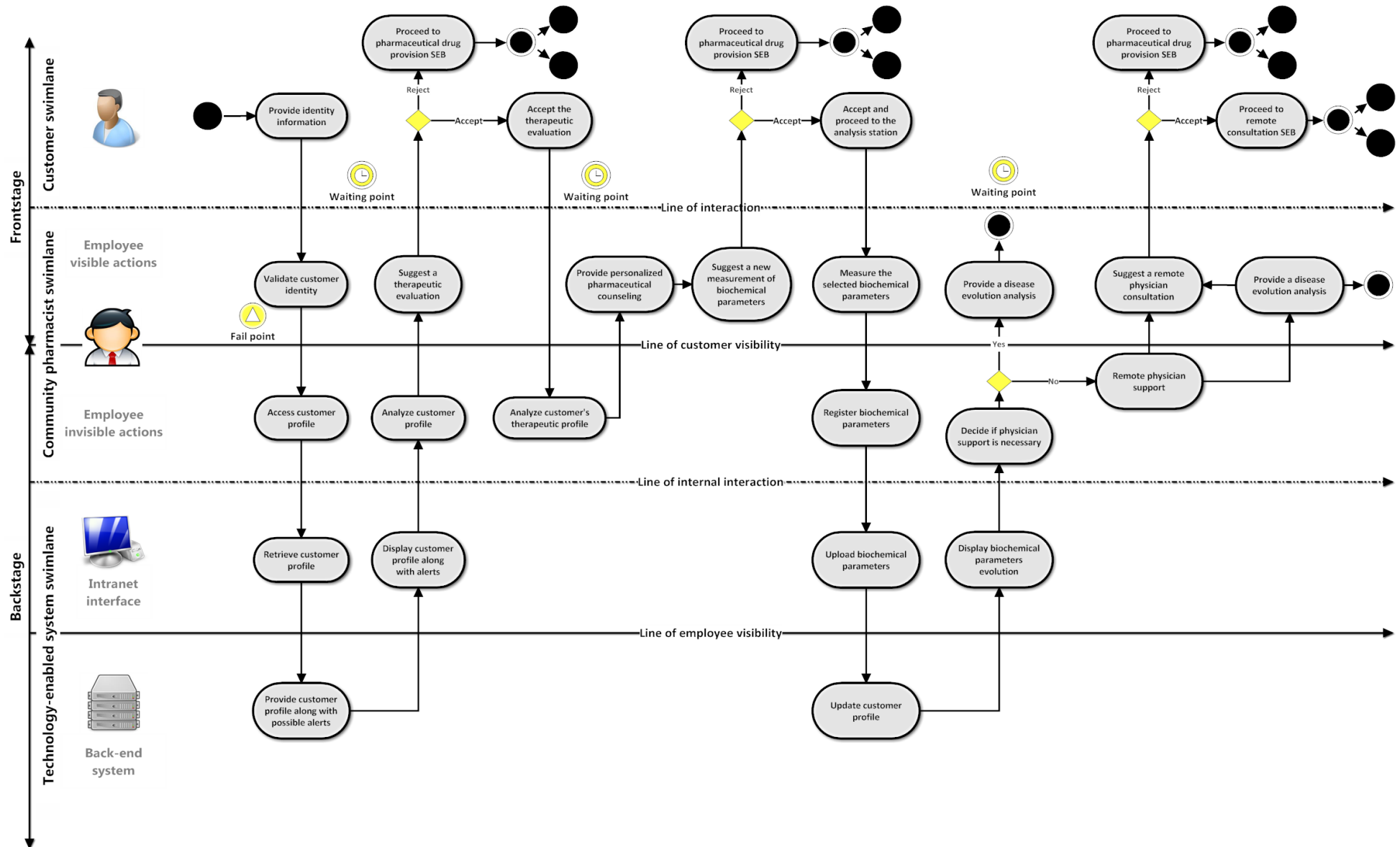
Appendix G: Service Encounter Experience for the provision of pharmaceutical drugs within the ePharmacare service.



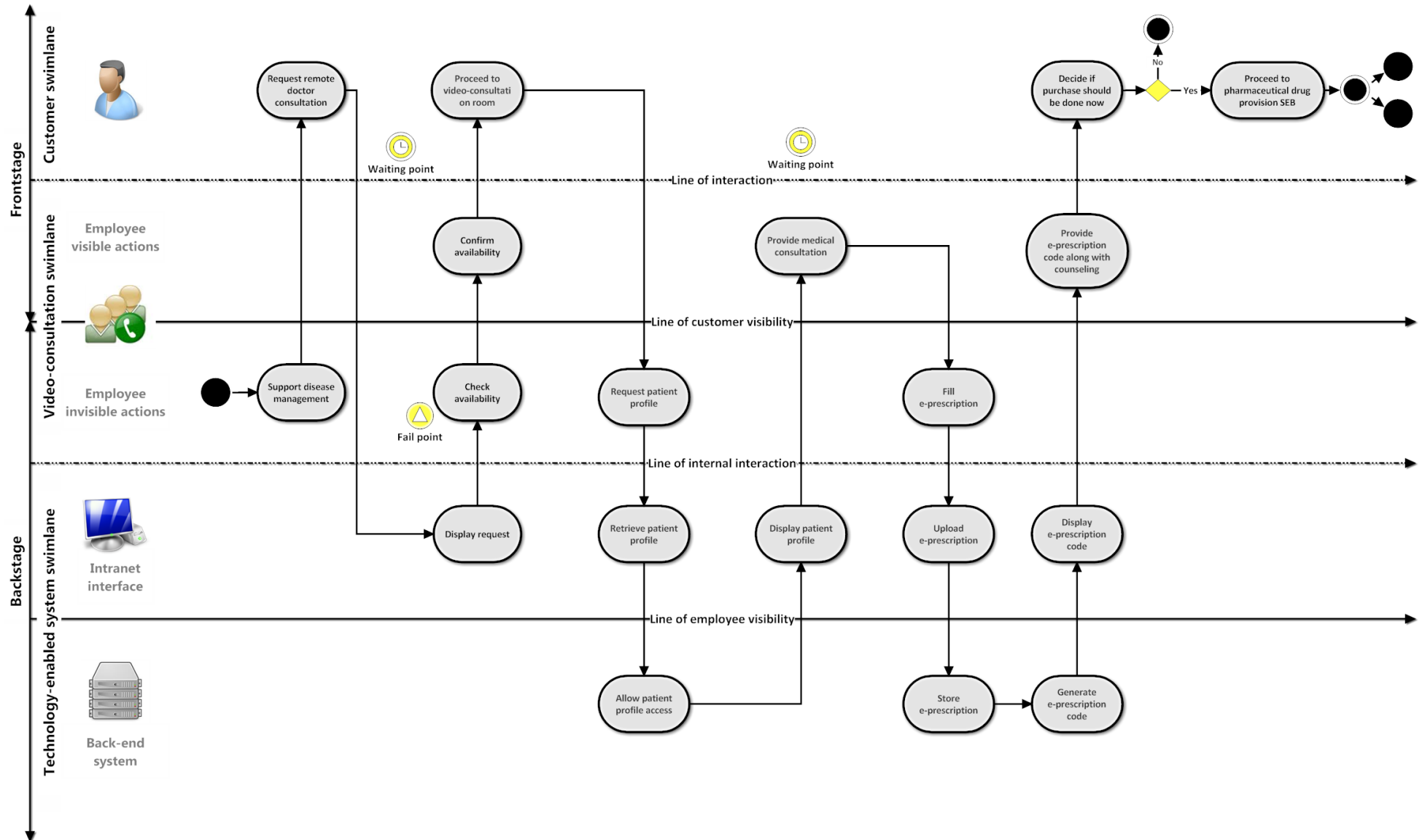
Appendix H: Service Experience Blueprint for the registration stage within the ePharmacare service (physical store interface).



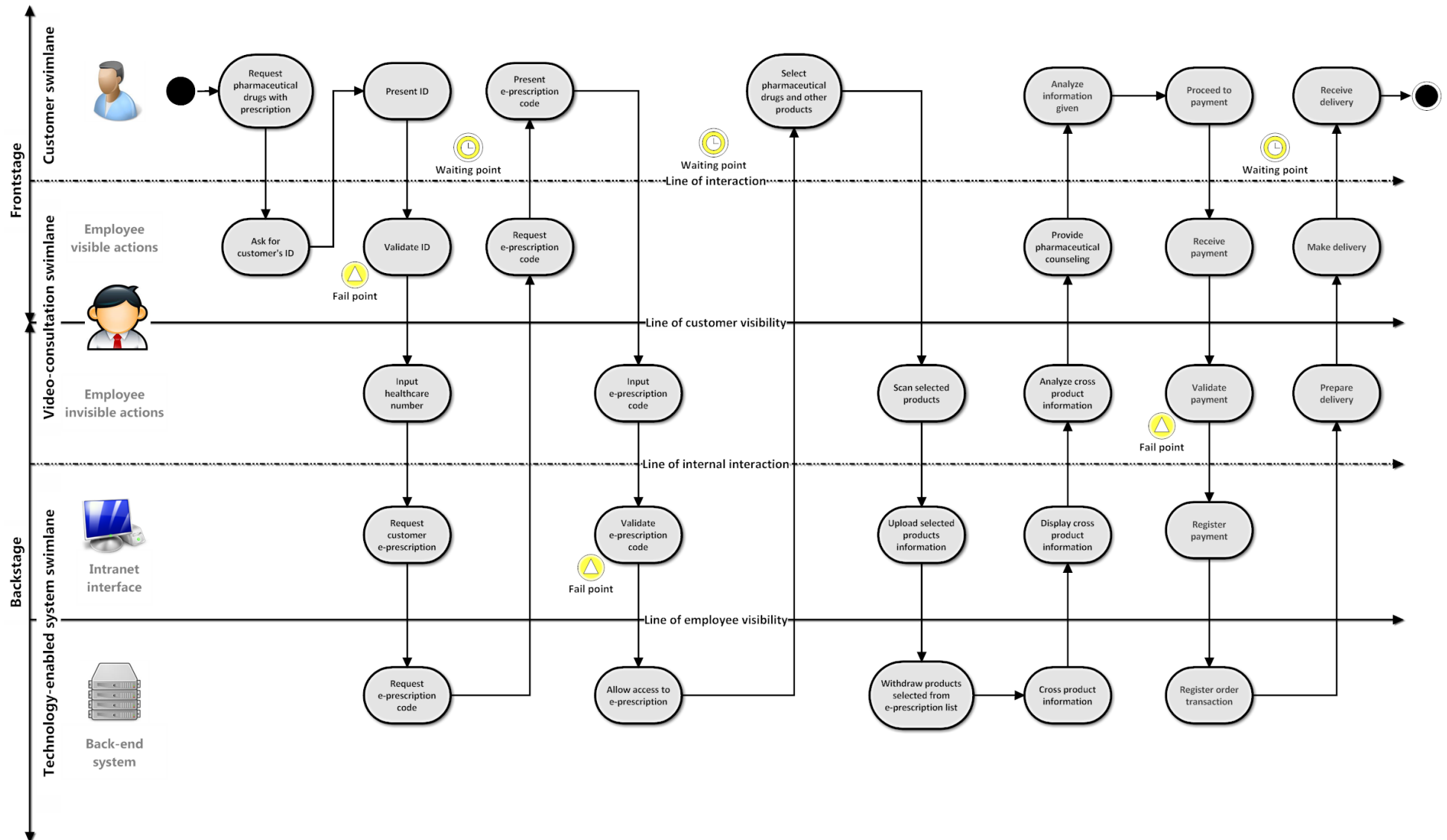
Appendix I: Service Experience Blueprint for the disease management stage within the ePharmacare service (physical store interface).



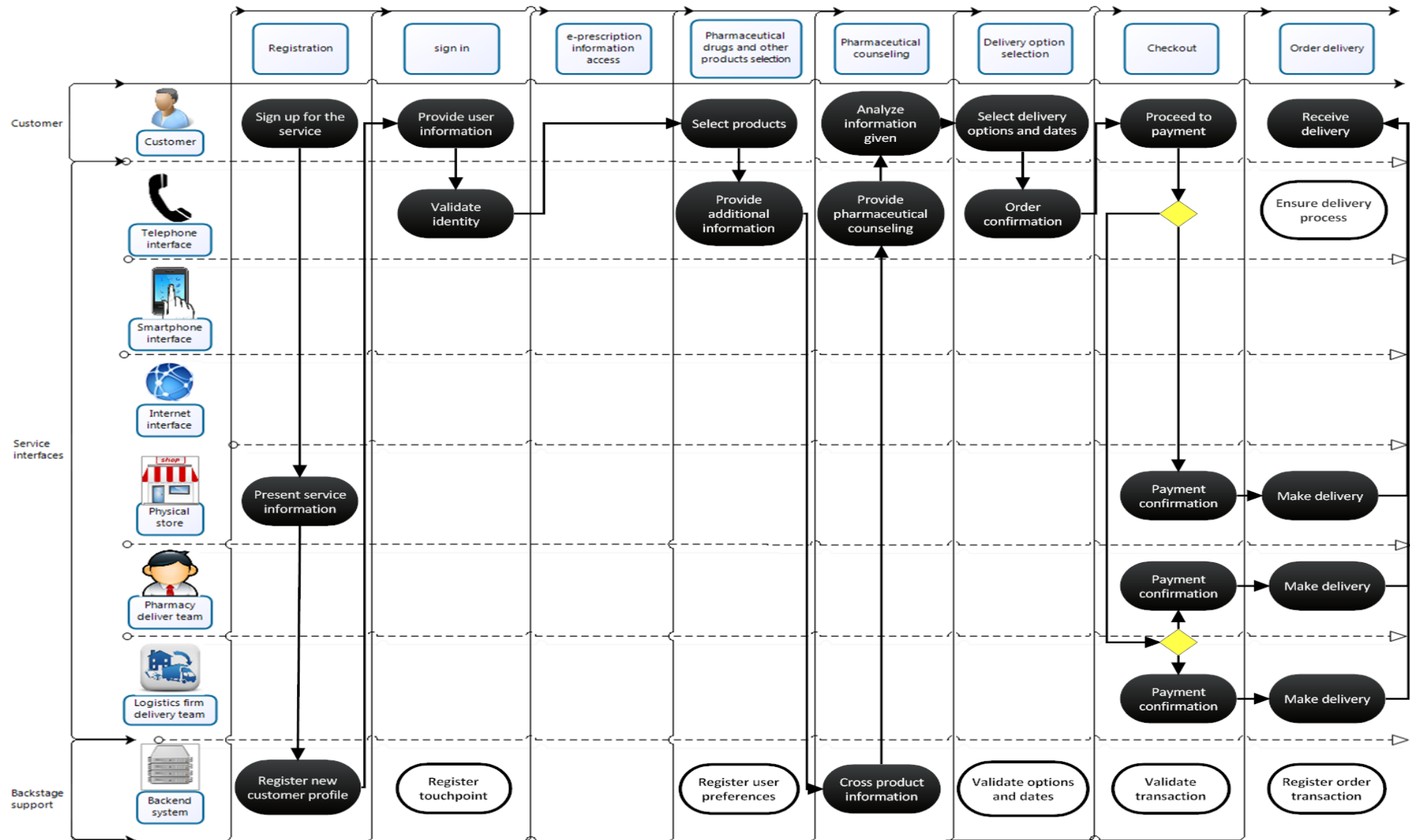
Appendix J: Service Experience Blueprint for the remote physician consultation stage within the ePharmacare service (physical store interface).



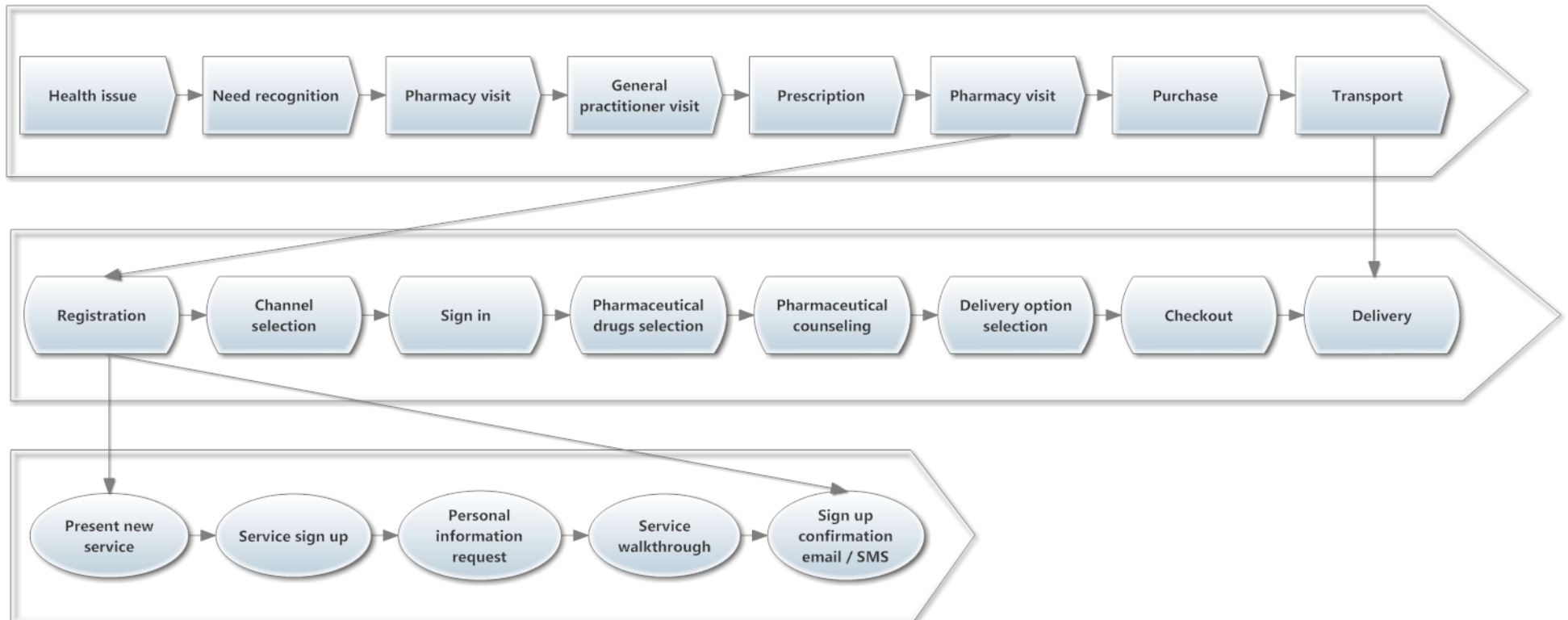
Appendix K: Service Experience Blueprint for the provision of pharmaceutical drugs stage within the ePharmacare service (physical store interface).



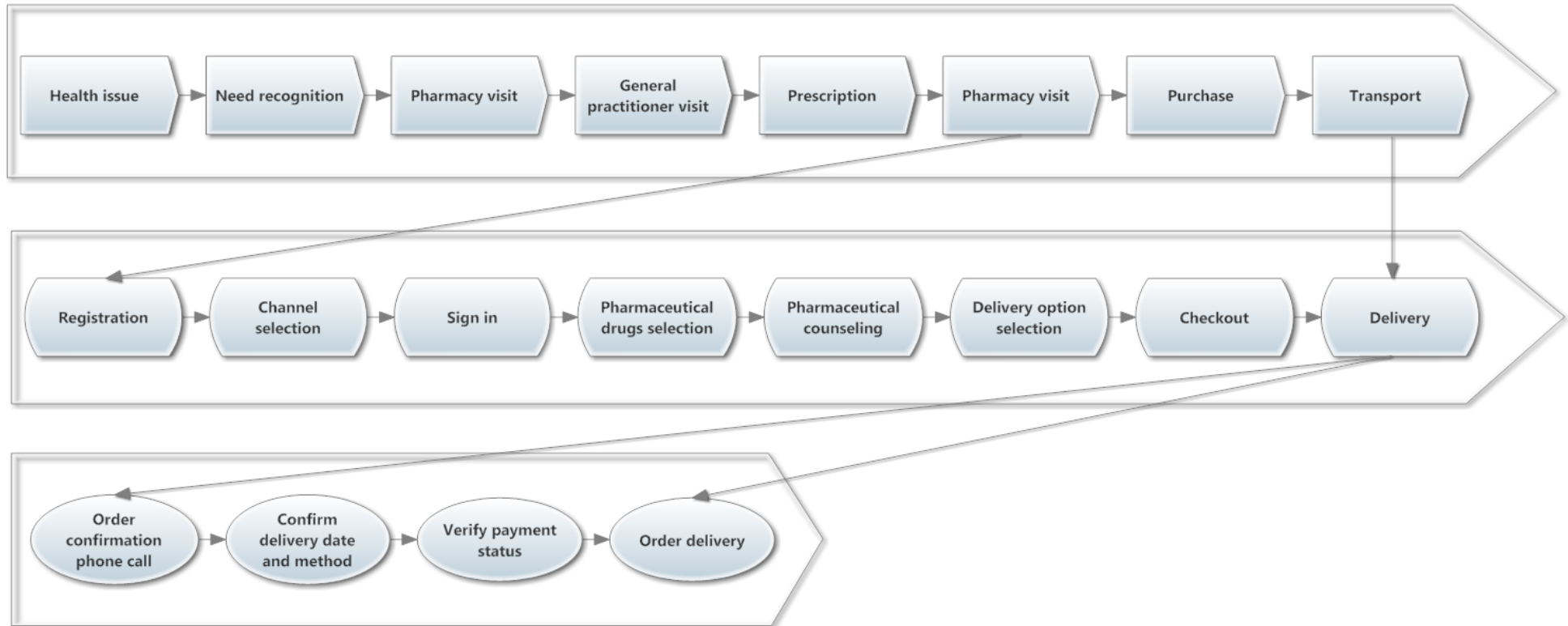
Appendix L: Service System Navigation for the telephone interface of the home delivery service.



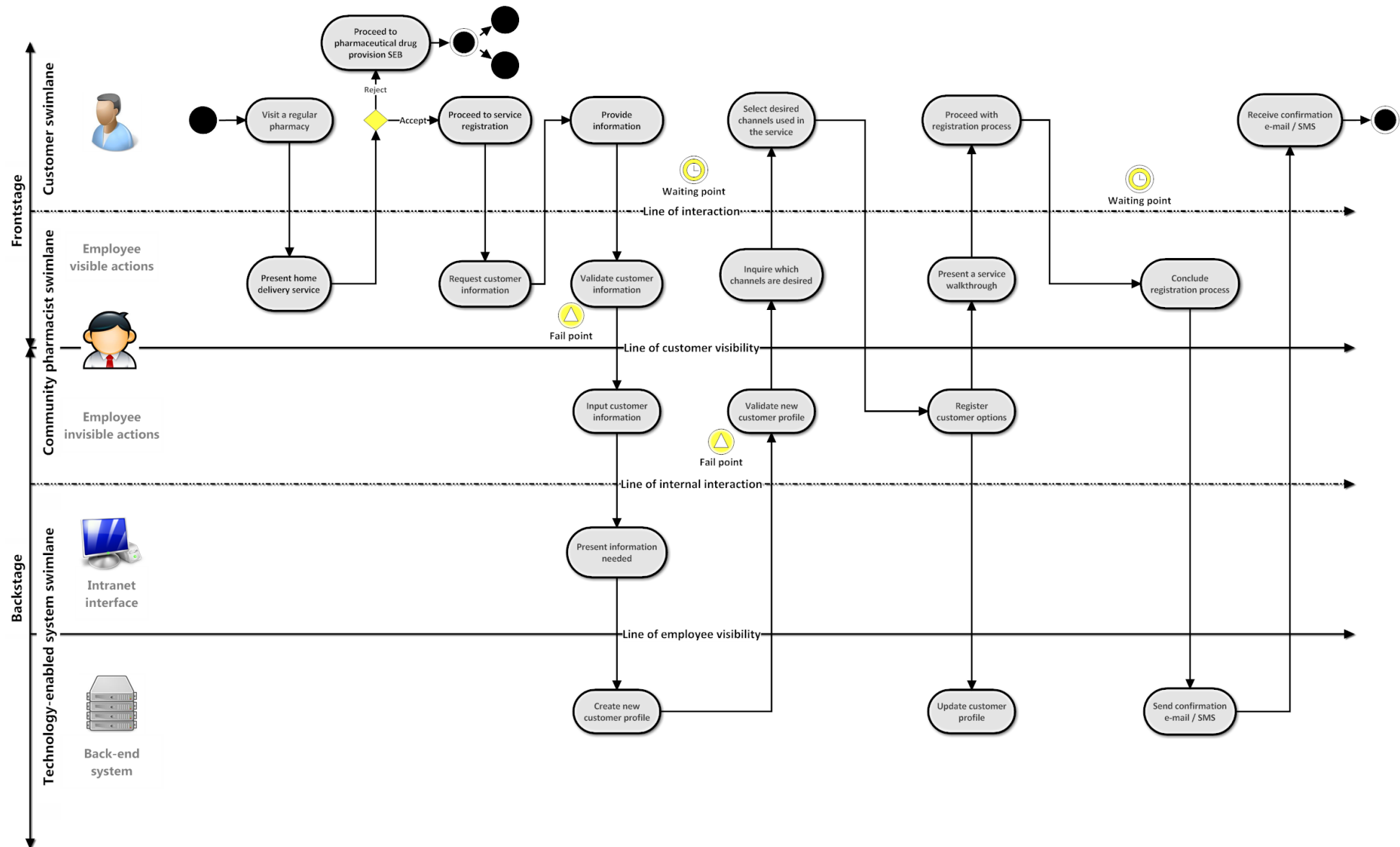
Appendix M: Service Encounter Experience for the registration stage within the home delivery service.



Appendix N: Service Encounter Experience for the delivery stage within the home delivery service.



Appendix O: Service Experience Blueprint for the registration stage within the home delivery service (physical store interface).



Appendix P: Service Experience Blueprint for the delivery stage within the home delivery service.

