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Course of **Research Project Design**

Designing an Airport Clothing Rental Service: A Research-Driven Approach to Innovation in Travel

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Abstract

This thesis introduces Skywear, an airport-based clothing and equipment rental service designed to reduce packing stress, hidden travel costs, and promote circularity. Motivated by my personal needs as a frequent traveller, the project explores the potential to enhance the travel experience within European commercial aviation. Using the Lean Startup methodology, surveys, interviews, and both quantitative and qualitative analyses, it was validated that the "luggage problem" significantly impacts travellers' behaviour. Findings reveal strong interest in traveling light, with proper fits shaping adoption intent. The final iteration proposes starting with travellers who lose their luggage, enabling an early-stage test of Skywear's feasibility.

Keywords: Entrepreneurship, Lean Startup, Customer Development, Circular Economy, Airport's Clothing Rental System, Luggage Problem.

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Chapter 1 - INTRODUCTION

Packing luggage takes time, exposes travellers to risk, and often becomes expensive and inconvenient. With the rapid expansion of European commercial aviation and the rise of Low-Cost Carriers (LCCs), air travel has become more affordable and widespread. However, this shift has also introduced unbundled service models, where tickets appear cheap but additional ancillary fees—such as those for checked luggage—significantly increase overall costs and complexity, while lost and mishandled baggage remain common issues (European Parliament, 2019). At the same time, a growing societal movement toward sustainable consumption and the rise of the sharing economy reflect consumers' increasing preference for access-based models over traditional ownership (Shrivastava et al. 2021). This convergence of environmental pressures and travel industry challenges creates fertile ground for innovation, where mobility, business, and sustainability intersect to generate forward-thinking solutions. In this context, this research proposes an entrepreneurial model—informed by the Lean Startup methodology—with the potential to reshape travellers' behaviour and contribute to a more sustainable, efficient, and stress-free travel experience. Specifically, it explores the psychological and practical drivers behind adopting Skywear's airport-based clothing rental service, focusing on the role of packing-related stress and luggage inconvenience in shaping travellers' preferences and intentions. Accordingly, the two central research questions guiding this thesis are:

Firstly, how packing-related stress is perceived across gender and age groups, and how it relates to different travellers' behaviours.

Secondly, how luggage inconvenience shapes the intention of the identified niche of travellers to adopt an airport-based clothing rental service, as well as their perceived value of travelling light.

To address these questions, the study tests five hypotheses derived from the literature, examining both the antecedents of packing stress (H1–H3) and its behavioural and attitudinal consequences based on an identified niche (H4–H5). The structure of this thesis has been carefully designed to guide the reader through the research process, from the identification of the problem to the validation of findings and practical implications. Below is an overview of the chapters and their respective contributions to the study.

Chapter 2 reviews the Lean Startup methodology, which serves as the theoretical foundation for this thesis. It introduces the principles behind launching and developing a lean project in contexts of uncertainty, focusing on concepts such as customer discovery, hypothesis validation, and iterative experimentation. Rather than presenting a rigid framework, the chapter discusses how these ideas guide the practical steps of this research and explain the sequence of decisions taken. Second, it synthesises research on pre-trip stress and decision burden—cognitive load, decision fatigue, and choice overload—and explains why packing can be stressful. It also discusses individual differences—gender and age (including digital familiarity)—that shape how travellers experience this stress. Building on this foundation, the three main hypotheses of the study are formulated, and their corresponding expectations are stated. Clarifying this foundation helps the reader follow the logic driving the process and the choices made in the chapters that follow.

Chapter 3 examines the market context in which this project emerges, providing a deeper

understanding of the environment where the proposed solution would operate. It explores the dynamics of European commercial aviation, including the rapid rise of low-cost carriers and the phenomenon of mishandling of luggage, which together have reshaped the travel experience and highlighted significant customer pain points. By analysing these trends, the chapter aims to clearly define the "luggage problem" at the center of this research.

This foundation prepares the transition to Chapter 4, where—following the Lean Startup principle of "getting out of the building"—the study tests whether the identified problem is truly perceived and experienced by travellers in practice. The chapter first outlines the methodology: data collection, the construction of key variables, and the regression specification with basic diagnostics. It then presents a quantitative analysis using descriptive statistics and linear regression to examine how packing stress, luggage experiences, and emotions relate to traveller behaviour and intentions. This stage marks the first of three iterative research cycles and aims to establish the problem at a general level.

Building on these insights, Chapter 5 focuses on a more specific niche of travellers, analysing their attitudes and behaviours around the same issue. Following, Chapter 6 uses the findings from the previous stages to design and evaluate a potential solution, bringing together the learnings from all prior analyses, within the broader context of sustainability and changing consumer preferences.

Finally, Chapter 7 concludes the thesis by discussing key implications, limitations, future steps and the reasoning behind the decision to iterate the business model and initially target travellers who have lost their luggage, as a strategic way to test and educate the market.

Chapter 2 - LITERATURE REVIEW

In this chapter, the literature review begins by introducing the main methodological framework guiding this thesis: the Lean Startup methodology. Since this research is structured around the creation and validation of a startup project, Lean Startup provides the iterative process through which problem validation, hypothesis testing, and strategic pivots are carried out. After outlining this methodological framework, the chapter turns to the theoretical foundation that supports the study. This section reviews the key concepts and academic perspectives necessary to understand travelers' decision-making, packing stress, and adoption behavior. Building on these insights, the chapter concludes by presenting the initial hypotheses that guide the first cycle of research.

2.1 The Lean Startup Methodology

The Lean Startup methodology, first formalized by Eric Ries (2011), offers a structured framework for identifying, testing, and scaling new business models through iterative, evidence-based experimentation. Building on the work on Customer Development by Steve Blank and Bob Dorf (2012), the Lean Startup model has become a foundational theory in entrepreneurship literature, particularly in studies similar to this one: of digital, service-oriented, and resource-constrained startups (Eisenmann, Ries & Dillard, 2012; Ghezzi & Cavallo, 2020).

The Lean Startup process begins with the understanding that early-stage ventures operate not with verified facts, but with a set of untested hypotheses. These typically concern the customer problem, value proposition, and market viability of the proposed solution (Blank &

Dorf, 2012). Rather than committing to a complete product or business plan from the outset, Lean entrepreneurs begin by articulating these hypotheses and immediately engaging with the real world to test them. This marks a key departure from the traditional “waterfall project management" which are slower, expensive and inefficient compared to the lean and agile costumer development. As Ries (2011) emphasizes, the goal is achieved through the hard work of discovering what customers really want and adjusting the product and strategy to meet those desires.

The first phase of this process is known as **Customer Discovery**, in which the startup investigates whether the problem it aims to solve is genuine, significant, and underserved: which is what this research is set to do in the following chapters. Founders are encouraged to engage in fieldwork—often described as "getting out of the building"—to directly observe customer behaviours, conduct interviews, and collect insights from potential users (Blank & Dorf, 2012). This early-stage market research informs the construction of a **Minimum Viable Product (MVP)**—a simplified version of the solution that enables rapid testing of key assumptions with minimal resource investment.

Following MVP development, the startup enters the **Build-Measure-Learn loop** (Ries, 2011), a core feature of Lean methodology. This iterative cycle involves building the MVP (or its next iteration), measuring customer response through quantitative or qualitative data, and learning whether the original hypotheses hold. If evidence supports the assumptions, the model is refined and further tested. If not, the startup is expected to **pivot**—that is, to make a strategic change to one or more components of the business model in light of new information (Frederiksen & Brem, 2017). As Harms (2015) explains, Lean Startup is not only a framework for testing business ideas but also a group-based experiential learning process. By working together, teams continuously test their assumptions, learn from failures, and adapt

their strategies in real time. This iterative approach is particularly relevant for this project, where understanding travellers' behaviours and refining the solution based on real feedback are essential for success. This pivoting mechanism ensures that the venture remains adaptive and responsive to real market conditions rather than persisting in flawed strategies, which is exactly what was decided in the development of this startup. In fact, after initial testing revealed potential complexities, the approach was iterated and the focus shifted toward the lost-luggage segment as an entry point.

A critical milestone in this process is achieving **product-market fit** — Customer Creation therefore is the point at which a startup has verified, through repeated validation, that there is sustained customer demand for its offering and that the business model is scalable (Eisenmann et al., 2012). This represents the ultimate objective of this project: reaching a stage where a clearly defined group of travellers recognizes the value of the service and is willing to pay for a solution they genuinely need. While this thesis focuses primarily on validating the problem and understanding travellers' behaviour, the long-term vision of the *Skywear* project is to develop a scalable business model based on real customer demand, enabling the transition from experimentation and learning to sustainable growth.

2.2 Theoretical Foundation

Packing sits within a recognised pre-trip stress window: tourism studies show stress often peaks before departure, with planning tasks—packing included—among key antecedents of vacation anxiety (Crotts & Zehrer, 2012). Within this context, packing concentrates many interdependent choices under time pressure. From a cognitive perspective, tasks that require sustained selection, sequencing, and monitoring impose cognitive load on a limited working memory system, increasing the likelihood of errors and perceived strain (Sweller, 1988). Cognitive Load Theory distinguishes *Intrinsic Load* (complexity of the task itself) from

Extraneous Load (how the task is presented or organised). In packing, intrinsic load rises with uncertain conditions (weather, activities), while extraneous load rises with poor structure (e.g., uncurated options[1], no checklists). Thus, higher load should manifest as longer packing time and higher reported stress, and interventions like digital packing solutions with curated bundles/ automated checklists would reduce extraneous load (Sweller, 1988).

More decisions create *Decision Fatigue*—a drop in self-control and persistence (Vohs et al., 2008). When fatigued, people get more risk-averse, procrastinate, or fall back on shortcuts, which is very likely during long packing sessions. At the same time, a closely related mechanism shows up: *Choice Overload*. As the option set grows, each decision feels harder, hesitation increases, and regret becomes more likely (Schwartz, 2004).

These two effects reinforce each other: more options translate into more decisions (→ fatigue), and fatigue makes a large option set even harder to handle. Practically, shrinking and structuring the choices (e.g., pre-curated outfits, automated checklists) should ease both overload and fatigue, lowering stress and speeding selection. This is why packing time works as a proxy for the cumulative decision burden (Vohs et al., 2008; Schwartz, 2004)

Beyond these general effects, people don't experience packing stress in the same way. Large-sample studies show that women report higher stress and use more emotion-focused coping than men, partly due to differences in perceived responsibility and daily hassles (Matud, 2004). A meta-analysis also finds greater risk aversion among women across contexts (Byrnes, Miller, & Schafer, 1999). In a packing setting—where the downside of under-preparing (forgetting, poor fit) feels costly—higher anticipatory concern and risk sensitivity can translate into higher stress among female travellers (Matud, 2004; Byrnes et al., 1999).

[1] For instance wearing always the same peace of clothes or not having the necessary equipment for a specific type trip.

Age can matter as well. Younger travellers are typically more comfortable using digital tools (smartphones, apps) to plan and coordinate trips, which can reduce uncertainty, streamline steps, and lower pre-trip decision effort. This supports the expectation that younger cohorts may report lower packing stress than older groups (Wang, Park, & Fesenmaier, 2012).

Building on these mechanisms and individual differences, the next section states the testable hypotheses linking decision load to packing stress and examining heterogeneity by gender and age.

2.2.1 Hypothesis – First Cycle of Analysis

Based on the literature and Skywear's vision to become the fastest and easiest way "to pack" in the world, this study tests three core hypotheses:

***H1**: **Longer packing time is positively associated with packing-related stress**.*

- *Expectation:* Packing can be perceived as an unpleasant part of the travel experience. Therefore, it is expected that individuals who spend more time packing will report higher levels of stress.

H2: Female travellers report higher levels of packing-related stress than male travellers.

- *Expectation*: To find differences between men and women in their baseline stress levels and the mental effort associated with packing.

H3: Younger participants (aged 18–24) are less stressed when packing compared to older age groups.

- Expectation: Gen Z travellers tend to adopt light-packing behaviours and prioritize efficiency and spontaneity in travel preparation, where their frequent use of low-cost

travel options and digital tools for trip planning suggests familiarity with travel logistics that may buffer against stress.

While the initial hypotheses focus on the general traveller population, additional hypotheses emerged later in the research process, after the first cycle of analysis. These are introduced in Chapter 5, which reflects the iterative nature of the Lean Startup approach.

Chapter 3 – MARKET DYNAMICS AND THE LUGGAGE PROBLEM

To clearly define the problem this research seeks to address, it is first necessary to understand the environment in which it emerges and the opportunities for solving it. While the study was conducted in Portugal, the broader focus is on Europe, which represents one of the largest and fastest-growing markets for short trips and frequent air travel — making it an ideal starting point for testing innovative travel solutions.

3.1 European Commercial Aviation, Market Analysis

In recent decades, the commercial aviation sector—especially within the European Union—has emerged as a critical pillar of international travel. The liberalization of the European aviation market, through policies such as the Single Aviation Market[2], enabled greater competition and fuelled the rise of low-cost carriers like Ryanair and EasyJet. These developments have made air travel more accessible, leading to a significant increase in

[2] The Single European Aviation Market is an EU policy that liberalized air transport by removing regulatory barriers, allowing any EU-based airline to operate freely across member states and fostering competition, lower fares, and greater connectivity (European Parliament, 2025).

passenger numbers. Between 2013 and 2019, EU air traffic rose from approximately 840 million to over 1.03 billion passengers annually (Eurostat, 2024). Despite a sharp drop during the COVID-19 pandemic, the market has rebounded strongly. By 2023, passenger volumes were nearing pre-pandemic levels, with forecasts estimating a return to over 1 billion passengers by 2025

Within Europe, regional air traffic accounted for 25.9% of the global share in 2023, positioning the continent as the second-largest aviation market after Asia-Pacific (31.7%) (ATAG, 2024). Looking at intra-European mobility patterns, the 2023 breakdown shows that 49% of air passengers travelled on extra-EU flights, while 35.9% were intra-EU and 15% domestic (Eurostat, 2024).

Major European hubs such as London Heathrow, Paris Charles de Gaulle, and Madrid-Barajas continue to handle tens of millions of passengers annually, with Heathrow leading in 2023 at 79.1 million passengers, followed by Istanbul and Paris (Eurostat, 2024). As passenger volumes continue to rise, operational pressures on airports and airlines have intensified, making luggage management an increasingly critical friction point for both travellers and service providers.

3.2 Luggage as Ancillary Revenue and Mishandling Problem

The expansion of low-cost carriers (LCCs) and the unbundling of airline services have transformed luggage into one of the most profitable ancillary revenue streams in commercial aviation. In 2024, global ancillary revenues were projected to reach approximately $148 billion, with baggage fees contributing more than one-third of this total (OAG, 2023). LCCs have played a central role in this shift, offering low base fares while monetizing add-ons such as checked luggage. This pricing model has forced many travellers—particularly short-haul and budget-conscious passengers—to adapt their behaviour. A growing number now opt for

carry-on-only travel to avoid rising baggage costs and the uncertainty of checked baggage systems. However, while cost-effective, this shift introduces new frictions: reduced packing flexibility, competition for limited overhead space, and decreased mobility during layovers or multi-leg journeys. Later chapters of this thesis include a detailed price analysis, supported by data and examples, illustrating how travellers often struggle to navigate dynamic pricing structures. This complexity frequently leads to frustration and negative perceptions of the air travel experience. At the same time, passengers who do choose to check luggage face persistent operational issues. In 2023, European airlines recorded the highest baggage mishandling rates globally, with 10.6 bags per 1,000 passengers—nearly double the rate in North America and triple that of Asia (SITA, 2024). Despite improvements in digital baggage tracking, the total number of mishandled bags still reached 36.1 million worldwide in 2023. Among these, 77% were delayed bags, and nearly half of those delays occurred during flight transfers. From the traveller's perspective, these operational challenges translate into tangible stress. According to IATA (2025), passengers in Europe increasingly cite "airport stress" as a major deterrent to air travel. Long baggage check-in queues, fears of delays or loss, and a lack of control throughout the journey contribute to an overall degraded travel experience. As passenger volumes continue to recover and are expected to double by 2040, the financial burden, operational risks, and emotional strain associated with luggage—whether carried or checked—highlight a growing service gap within the aviation ecosystem.

3.3 Definition of the "Luggage problem"

This study frames what I define as the 'Luggage Problem' — a combination of interrelated frictions that include the psychological stress of packing, the time and cognitive effort it demands, and the physical and financial inconvenience of carrying or managing bags. The next chapters explore these dimensions further, testing whether travellers perceive this as a significant problem, identifying a promising niche and investigating the potential of a

luggage-free clothing and equipment rental model to address their needs.

Chapter 4 - RESEARCH METHODOLOGY & FIRST CYCLE OF ANALYSIS

Following the definition of the "Luggage Problem" in the previous stage, Chapter 4 presents the methodology used to investigate whether this issue is real and significant for travellers. Guided by the principles of the Lean Startup methodology, this stage focuses on testing initial hypotheses rather than relying on assumptions, aiming to validate the possible frictions identified in Chapter 3.

4.1 Methodology

To evaluate the feasibility and desirability of a clothing rental service for air travellers, this study employed a mixed-methods research design that combined quantitative and qualitative data sources. As Creswell notes, "the collection of both quantitative and qualitative data neutralizes the weaknesses of each form of data" (Creswell 2017, 62). The first phase involved a structured survey distributed in person to 70 passengers at Lisbon's Humberto Delgado Airport over the course of two days. The survey (see Appendix 1 – General Travellers Survey)—primarily quantitative but including some open-ended questions—was administered strategically in the arrival parking area while travellers waited for Uber pickups, ensuring participants had the necessary 5–10 minutes to complete it. The questionnaire focused on perceived packing stress, emotional connection to the traveling experience and clothing, frequency of forgotten items, and cost sensitivity around luggage.

The second research phase, which will be part of the following chapter, targeted a specific niche segment identified through exploratory analysis: yoga and wellness retreat travellers. Thus, a follow-up survey was conducted at the *2025 Health and Consciousness Summit* in Lisbon, gathering 30 responses through a combination of closed and open-ended questions focused on the perceived value of traveling without luggage, concerns about clothing rental (e.g., fit, hygiene, style), and price expectations (see Appendix 2 – Niche Travellers Survey).

In parallel, qualitative interviews and stakeholder meetings were conducted separately in Lisbon—either in person or via online calls—following methodological guidelines for semi-structured interviews described by Denny and Weckesser (2022). Participants were purposively selected from both consumer and industry segments and all provided informed consent. Key insights and themes were documented with dates for transparency and validity. The exercise of transparency was present in the acknowledging of the study's limitation such as the limited amount of time or budget, elucidating their implications for the overall validity and reliability of our research findings (Tracy, 2019).

To test the study's hypotheses and strengthen its empirical foundation, both Chapter 4 and 5 had several statistical analyses applied. These included a multiple linear regression to investigate the predictors of packing-related stress, a binary logistic regression examining the likelihood of adopting the *Skywear* service, and Pearson correlation analysis to explore the relationship between perceived luggage inconvenience and the value attributed to traveling light. Descriptive analyses complemented these models by summarizing relevant behavioural trends. Together, these methods establish a multidimensional understanding of the "Luggage problem" and inform the viability of *Skywear*'s core value proposition.

4.2 First Cycle of Analysis – does the problem truly exists?

Since the aim of this first research cycle is to validate whether the luggage problem truly exists, the analysis begins with a brief review of the data collection, the construction of key variables and the specification of the regression model. Building on the theoretical framework and the first three hypotheses outlined in the Literature Review (H1–H3), the findings are then analysed and discussed to evaluate whether the initial assumptions are supported.

4.2.3 Data Collection

The selection of the 70 survey participants was done on a random basis, with the aim of including a diverse set of people. Efforts were made to balance perspectives across different age groups, genders, and travel styles, so that the sample could reflect a variety of passenger profiles. The key variable of interest, *packing-related stress*[3], was measured using **single-item measure** on a five-point Likert scale, where respondents rated their perceived stress levels while preparing their luggage. To better understand the factors influencing stress, the survey also captured several independent and control variables:

- *Packing time*[4] was measured as the self-reported number of hours spent preparing luggage for a trip.
- *Gender* was included as a categorical variable with two groups: male and female; whereas *Age Group* had 5 different groups: [18-24], [25-34], until [55+].
- Control variables included *clothing needs by trip type*[5] (indicating the importance of wearing personal clothing for different types of travel), and whether the participant

[3] Dependent variable: *stress_packing*
[4] Indipendent variable: *packing_time_num; gender; Age_group*
[5] Control variable: *clothing_needs_by_trip; lost_luggage*

had previous *negative luggage experiences* (lost or damaged baggage, coded as yes/no).

4.2.4 Model Specification

The estimated model takes the following general form:

$$stress\_packing = \beta 0 + \beta 1(packing\_time) + \beta 2(gender) + \beta 3(age) + \beta 4(clothing\_needs) + \beta 5(lost\_luggage) + \varepsilon$$

In addition, an interaction model was tested to examine whether the relationship between packing time and stress differs by gender:

$$stress\_packing = \beta 0 + \beta 1(packing\_time) + \beta 2(gender) + \beta 3(packing\_time \times gender) + \varepsilon$$

Assumption diagnostics confirm that there are no multicollinearity problems (VIF < 1.3), residuals are normally distributed and homoscedasticity is met (Breusch–Pagan test p = 0.62). (See Appendix 3 – Assumptions Diagnostic).

4.3 Findings

Before discussing the results of the tested hypotheses, it is essential to review the descriptive analysis of the survey data, as it offers valuable context by illustrating travellers' experiences, behaviours, and frustrations. These insights help explain the underlying dynamics of the problem and guide the interpretation of the regression findings.

4.3.1 Descriptive Results

The descriptive analysis reveals that luggage management is a significant source of stress and frustration for travellers, manifesting in emotional disruptions, financial dissatisfaction, and cognitive overload. A substantial 52.9% of respondents reported experiencing at least one negative luggage-related incident, including damaged baggage, lost items, or unexpected fees. Among these cases, 14 participants reported damaged luggage, while 12 experienced lost

baggage. One traveller described their situation as particularly challenging:
"I had to stay in Barcelona for a week with only one pair of underwear and one outfit."
Additionally, three respondents highlighted excessive baggage fees due to overweight charges, with one referring to it as: *"...a $120 inconvenience."*.

Financial dissatisfaction also emerged as a critical friction point. The data shows that 80% of respondents considered airline baggage fees *"too expensive"*, 12.9% found them problematic only *"sometimes",* and only 7.1% reported no issues with pricing. From a behavioural economics perspective, these findings align with the pain-of-paying theory, which demonstrates that consumers perceive separate, unbundled charges — such as baggage fees — as more psychologically costly than bundled or prepaid expenses (Prelec and Loewenstein 1998).

Finally, the process of packing itself emerged as an important source of stress, with 75.7% of participants reporting that they forgot essential items when preparing for their trips. The most frequently forgotten items included *chargers* (15 mentions*), toothbrushes, toothpaste, and eye care products* (approximately 8 mentions), as well as *flip-flops, towels, sunglasses, and pyjamas* which were often associated with weekend or summer travel. These findings indicate that packing is not only time-consuming but also error-prone, driven by cognitive overload, time pressure, and task complexity. This pattern is consistent with Cognitive Load Theory, which explains that human working memory has limited mental capacity. When travellers face multiple simultaneous decisions, such as choosing outfits, managing baggage, and evaluating additional fees, the excessive cognitive demand impairs performance and increases frustration (Sweller, 1988).

Taken together, these insights paint a comprehensive picture of the emotional, financial, and behavioural frictions travellers face when managing luggage and preparing for their trips.

This contextual understanding establishes the foundation for the subsequent inferential analysis, which examines whether these stress factors are significantly associated with travellers' reported packing-related stress.

4.3.2 Inferential Results

Before presenting the individual hypothesis results, it is important to note that, despite the relatively small sample size and the behavioural nature of this study, the model shows a satisfactory explanatory power. The R^2 value and the level of significance obtained are considered appropriate for this type of social and behavioural research, providing a solid basis for interpreting the following results. Moreover, the model incorporates numerous independent variables, with particular attention to the inclusion of different age categories, each of which is tested separately. This approach increases the complexity of the specification and raises the possibility of overspecification. Nevertheless, the diagnostics and the empirical results of the model are satisfactory, providing consistent and meaningful outcomes. For this reason, the model is retained in its current form despite its extensive specification. *(See Table 1: Multiple Linear Regression - Predicting Stress While Packing)*

***Hypothesis 1: Longer Packing Time Increases Packing Stress* – Confirmed**

The first hypothesis proposed that longer packing time would be associated with higher levels of packing-related stress. The results provide strong support for this assumption, showing that packing time significantly predicts stress *($\beta = 0.48$, $p < 0.01$).* This indicates that travellers who spend more time preparing their luggage report substantially higher stress levels. These findings validate the core premise underlying Skywear's value proposition, confirming that packing represents a cognitively demanding and emotionally draining process for a large share of travellers.

***Hypothesis 2: Gender Differences in Packing Stress* – Partially Confirmed**

The second hypothesis predicted that female travellers would report higher levels of packing-related stress than male travellers. The results partially support this assumption. The regression analysis indicates a marginally significant negative coefficient for male participants ($\beta = -0.54$, $p \approx 0.05$), suggesting that female travellers experience slightly higher stress levels overall.

Additionally, the interaction effect between packing time and gender is statistically significant ($\beta = -0.637$, $p < 0.05$). This result demonstrates that while longer packing times increase stress for both men and women, the effect is considerably stronger among female travellers, overall suggesting that gender plays a relevant role in the perception of packing-related stress, providing a useful insight for Skywear when considering early adopter targeting strategies. (see Appendix 4 – Regression Model with Interaction Effects.)

***Hypothesis 3: Younger Travelers Experience Lower Packing Stress* – Declined.**

The third hypothesis proposed that younger travellers (aged 18–24) would report lower levels of packing-related stress compared to older respondents. The results do not support this assumption. In fact, the regression analysis suggests that younger participants may experience equal or even higher levels of stress compared to other groups.

The only statistically significant difference is observed in the 25–34 age group, who report significantly lower levels of stress compared to the reference group (18–24) ($\beta = -0.492$, $p < 0.1$). For all other age categories (35–44, 45–54, and 55+), the differences are not statistically significant, suggesting no consistent linear relationship between age and packing stress.

These results indicate that younger travellers may be more vulnerable to packing-related stress, potentially due to limited experience managing travel logistics. In contrast, slightly older travellers (25–34) appear to have developed more efficient strategies, resulting in lower stress levels. Therefore, the initial assumption has been challenged and this highlights the importance of basing strategic decisions on behavioural insights rather than demographic expectations.

Table 1: Multiple Linear Regression - Predicting Stress While Packing

	Dependent variable:
	stress_packing
packing_time_num	0.483***
	(0.139)
genderMale	−0.542*
	(0.272)
age25-34	−0.492*
	(0.277)
age35-44	−0.522
	(0.367)
age45-54	0.224
	(1.051)
age55+	−0.885
	(1.057)
clothing_needs_by_trip	0.382
	(0.251)
lost_luggage1	0.166
	(0.250)
Constant	1.777***
	(0.438)
Observations	70
R^2	0.391
Adjusted R^2	0.311
Residual Std. Error	1.013 (df = 61)
F Statistic	4.894*** (df = 8; 61)
Note:	*p<0.1; **p<0.05; ***p<0.01

4.3.3 Summary of some non-significant predictors:

Other variables such as past negative experience, and emotional attachment to clothing were

included in the model but did not show statistically significant relationships with packing stress. While these variables were theoretically relevant, their limited predictive power in this sample suggests that their effects may be mediated by other factors or not strongly perceived by travellers. Their inclusion, however, supports a robust test of the model and informs future research directions.

4.4 Implications for the Startup

The analysis from this first research cycle provides clear guidance for Skywear's early-stage business strategy and support the overall validation of the problem to address. The results confirm that packing represents a significant source of stress for travellers, particularly among *female and younger segments*, positioning them as promising early adopters for a service which will be designed to reduce decision fatigue and simplify the travel preparation process. Skywear's value proposition should therefore emphasize stress reduction, convenience, and "pack-free" travel, aligning its offering with the need to remove friction from the pre-travel experience. Overall, this phase fulfils the first step of the Build–Measure–Learn cycle within the Lean Startup methodology, demonstrating that a real and significant pain point can be addressed. With the general problem validated, the next step focuses on moving from problem understanding to solution exploration.

Chapter 5 introduces the second research cycle, which narrows the analysis to a specific niche segment that aligns strongly with the pillars of lightness, minimalism, and stress-free living. Through a targeted survey, it will be evaluated solution viability, exploring adoption potential, personalization needs, and price sensitivity in order to start building the first MVP.

Chapter 5 — NICHE VALIDATION THROUGH TARGETED BEHAVIORAL AND QUALITATIVE ANALYSIS

5.1 Second Research Cycle, Strategic Pivot and Niche Identification

Following the findings from Chapter 4, which confirmed the cognitive burden, emotional stress, and gender-based differences associated with packing, this chapter focuses on identifying and validating Skywear's potential early adopter segment. Initially, the research attempted to implement the study among a closer and more accessible population: university students. However, this approach did not yield meaningful results. Most respondents in this group expressed limited interest in the service, perceiving Skywear as a substitute for their own clothes rather than a new way of traveling. Instead of recognizing the value proposition of traveling light, many preferred to maintain control over their personal clothing choices, resulting in low adoption intent within this segment.

Based on these insights — and following a month of additional research supported by professors' recommendations and stakeholder consultations — a strategic pivot was made toward a more promising niche: yoga retreat travellers. This audience aligns more naturally with Skywear's vision and brand pillars, as they tend to embrace lightness, minimalism, and sustainability — values central to the concept of traveling without luggage.
As a matter of numbers, the European wellness tourism sector encompasses 328.5 million trips annually, with Portugal accounting for 5.9 millions of those. Notably, around 600

thousand trips are made by international primary wellness travellers[6] — a niche segment characterized by higher discretionary spending and stronger alignment with sustainability values (Global Wellness Institute & Turismo de Portugal, 2024).

Now, as Lisbon has become a central hub for wellness tourism, attracting a large community of women traveling with the purpose of relieving stress and improving well-being, this audience represents a natural fit for Skywear's vision of simplifying travel. However, as the Lean Startup methodology emphasizes, such assumptions require validation through testing; therefore, this phase aims to assess whether the hypothesized adoption potential can be observed. To test this assumption, a targeted behavioural survey was conducted during the *Conscious & Health Summit 2025* in Lisbon, engaging 30 participants representative of the yoga retreat traveller's archetype. In parallel, qualitative interviews with academics, retreat organizers, sustainable fashion retailers, and industry stakeholders were conducted to deepen understanding and refine strategic priorities.

5.2 Objectives and Hypothesis Framework

This research phase served two primary objectives:

1. *Niche Validation* → Test whether luggage inconvenience[7] and the value attributed to traveling light actually translate into stronger Skywear adoption intent within this audience. Additionally, it has been examined whether this frustration around luggage

[6] individuals who travel specifically and intentionally for wellness-related purposes.
[7] luggage inconvenience refers to the overall physical, cognitive, and emotional burden associated with managing personal belongings throughout the air travel journey. It includes all processes and movements connected to luggage handling, such as transporting it to the airport, navigating security checks, managing it inside the airplane (e.g., overhead storage or bathroom access), waiting in lines for check-in or boarding, retrieving it at the destination, and coping with anxieties related to weight limits, size compliance, and potential delays or loss.

correlates with the value attributed to traveling luggage-free which is Skywear core proposition.

2. *Strategic Positioning* → Identify behavioural triggers, emotional barriers, stakeholders feedback and pricing thresholds to guide the minimum viable product (MVP) design.

5.2.1 Hypothesis

While the hypotheses examine the influence of luggage inconvenience, they focus on two distinct dimensions of consumer behaviour. H4 investigates whether the inconvenience of luggage predicts a traveller's intention to adopt Skywear's service, emphasizing behavioural likelihood. This is based on participants' willingness to leave their email and express interest in becoming early users of the service, representing an actionable signal of adoption intent. Alongside, an exploratory sub-hypothesis (H4b) was tested to examine whether travellers who already value traveling light are more likely to adopt Skywear. The rationale was that a strong positive attitude toward luggage-free travel might increase adoption intent.

In contrast, H5 explores whether luggage inconvenience influences the perceived value of traveling light, capturing a psychological evaluation rather than a behavioural commitment. This perception is shaped by travellers' current travel habits — for example, frequent light packers may assign higher value to Skywear's proposition of avoiding checked luggage altogether. This distinction highlights the difference between actionable intent and attitudinal preference, which are equally important for understanding the potential adoption of Skywear's offering.

H4: Luggage inconvenience predicts Skywear adoption intent

- Expectation: The perceived inconvenience of managing luggage positively predicts the likelihood of adopting an airport-based clothing rental service, such as Skywear.

H4b (Exploratory): Perceived value of traveling light predicts SkyWear adoption intent.

- Expectation: Travelers who highly value luggage-free travel are more likely to adopt Skywear's service.

H5: Luggage inconvenience predicts the perceived value of traveling light:

- Expectation: Higher perceived luggage inconvenience is positively associated with the value travellers attribute to luggage-free travel solutions, such as Skywear's offering.

5.2.2 Data Collection & Analysis

Participants for the second survey were recruited at a curated wellness event that convened attendees engaged in yoga, meditation, healthy living, and stress-management practices. Using purposive, on-site recruitment, I approached individuals across different ages and genders who self-identified as actively interested or involved in these practices. Accordingly, this sample is not intended to represent the general traveller population; rather, it is appropriate for examining attitudes among a likely early-adopter segment.

The independent variables, *perceived luggage inconvenience* and the *value of traveling light*, were measured using single items measures on a five-point Likert scale (1 = not inconvenient/ valuable at all, 5 = extremely inconvenient/ valuable). For the former variable participants were asked, "*How inconvenient do you find carrying luggage through airports, public transport, or during your trip?"* whereas for the latter they were asked "*How valuable would it be to travel without any luggage at all?";* The last question clarified that the scenario assumed traveling without carry-on or checked baggage (but only with a small backpack which is usually included).

The H4 dependent variable, adoption intent, was captured through participants' responses to

whether they were interested in trying out Skywear's service, coded as a binary variable (Yes/No). Contrary to H4b, the *dependent* variable for H5 was the value attributed to luggage-free travel, still measured on a five-point Likert scale (1 = very low value, 5 = very high value).

To test H4 and H4b relationship, a binary logistic regression was appropriate in this context as it estimates the likelihood of adoption based on varying levels of perceived luggage inconvenience and perceived value of travelling light, providing interpretable results through odds ratios that indicate how strongly the predictor influences the probability of adoption. Whereas to test H5, a Pearson correlation analysis was performed as it is well-suited for assessing the strength and direction of associations between two continuous variables. This approach allows us to determine whether travellers who experience greater frustration with luggage tend to assign more value to Skywear's offering of luggage-free travel.

5.3 Niche Findings

Following Chapter 4 research method, this analysis begins with descriptive statistics to provide an overview of yoga retreat and wellness travellers' behaviours, preferences, and perceived value of luggage-free travel, as well as willingness-to-pay dynamics. Building on this context, the section then examines the results of the hypothesis testing, which validate whether perceived luggage inconvenience predicts both adoption intent and the value attributed to traveling light.

5.3.1 Descriptive Niche Findings

The descriptive findings indicate a strong perceived value for Skywear's offering: 80% of respondents rated luggage-free travel as highly valuable, with 57% giving the maximum score (5/5) and another 23% rating it 4/5. This demonstrates that the majority of participants

recognize meaningful benefits in removing luggage from their journey and see the potential to simplify the travel experience. However, the results also highlight several barriers that could affect adoption. Among respondents, 71% expressed concerns about fit and sizing, 43% raised doubts about style alignment, and surprisingly only 10.7% highlighted hygiene-related considerations. In parallel, 40% of participants reported spending between one and two hours packing, revealing that the cognitive burden associated with preparing luggage remains significant. Taken together, these findings suggest that while travellers perceive luggage-free mobility as valuable, adoption is contingent on overcoming trust and personalization challenges. To address these concerns, Skywear's minimum viable product (MVP) design must integrate smart sizing tools and personalized recommendations to ensure an optimal fit. These considerations set the foundation for refining Skywear's value proposition and targeting early adopters more effectively.

While these insights provide clarity on traveller perceptions and adoption barriers, understanding potential demand requires exploring travellers' willingness to pay for Skywear's offering.

5.3.2 Niche Willingness to Pay and Pricing Strategy

To assess Skywear's pricing potential, respondents were asked to indicate a reasonable price for a seven-day clothing rental, including delivery at their accommodation or retreat. The findings reveal a clear pricing corridor, with approximately 70% of respondents selecting a range between €50 and €150. Within this range, 50% preferred €50–€100, while 20% opted for €100–€150. Lower-priced preferences (<€50) accounted for 10% of responses, while 7% indicated willingness to pay more than €200, and 13% provided no response.

Further segmentation highlights differences across demographic groups. Women dominate the €50–€150 price range, showing higher willingness to pay than men, who were concentrated in the lower-priced tiers or displayed greater price neutrality. From an age perspective, interest peaks among travellers aged 20–40, particularly within the mid-premium tiers, whereas younger and older respondents demonstrated lower engagement and greater price sensitivity. (See Appendix 5 – Willingness to pay based on Gender or Age).

These insights position Skywear as a mid-premium service, with an optimal pricing range of €50–€150 per week; Based on deeper analysis in the next Chapter, an actual entry price will be calculated through unit economics and luggage costs. This pricing corridor balances perceived value, affordability, and market competitiveness while aligning closely with the identified early adopter profile: wellness-oriented, convenience-driven travellers who seek frictionless mobility and are willing to invest in solutions that simplify their experience.

Together, these descriptive findings and pricing insights provide a comprehensive view of Skywear's potential early adopters — their needs, pain points, and willingness to pay. However, while these observations reveal a positive perception of luggage-free mobility, they do not confirm whether perceived luggage inconvenience or the value of light travel directly influences adoption intent. To validate these assumptions, the next section presents the results of the hypothesis testing, using a binary logistic regression and a Pearson correlation analysis to evaluate the relationships between luggage-related stress, adoption likelihood, and perceived value.

5.3.3 Niche Inferential Results

***H4 — Luggage Inconvenience affects Skywear Adoption Intent* – Confirmed**

The results of the binary logistic regression, (See Table 2: Binary Logistic Regression Results), show that luggage inconvenience has a positive and statistically significant effect on Skywear adoption intent ($\beta = 1.602$, OR = 4.965, $p < 0.1$). Travelers who perceive luggage management as highly inconvenient are almost five times more likely to express interest in using Skywear compared to those with lower inconvenience perceptions. This finding supports H4 and validates the central assumption of Skywear's business thesis: addressing packing and luggage-related frustrations directly increases the likelihood of adoption.

Table 2: Binary Logistic Regression Results

	Dependent variable:
	Interested (1 = Yes)
Inconvenience of Luggage	1.602*
	(0.894)
Value of Traveling Light	−0.954
	(0.808)
Constant	2.394
	(3.121)
Odds Ratio (Inconvenience)	4.965
Odds Ratio (Value)	0.385
VIF (Both predictors)	1.255
Observations	30
Log Likelihood	−6.617
Akaike Inf. Crit.	19.234
Note:	*p<0.1; **p<0.05; ***p<0.01

***H4b — Perceived Value of Traveling Light Predicts Adoption Intent* - Not Confirmed**

Since Skywear's concept focuses on simplifying travel, the model also tested whether travellers who already value traveling light are more likely to adopt the service. However, the results

show no significant relationship ($\beta = -0.954$, $p > 0.1$), (See Table 2: Binary Logistic Regression Results). This suggests that positive attitudes toward luggage-free travel do not necessarily translate into action. While many appreciate the idea, factors such as preference for personal clothing, trust concerns, or lack of familiarity with rental services may limit immediate adoption.

Strategically, this finding highlights that adoption intent is driven more by solving a concrete pain point — luggage frustration — than by abstract attitudes toward light travel. For Skywear, this reinforces the importance of focusing early pilots and messaging on travellers who actively experience luggage-related challenges.

H5 — *Luggage Inconvenience Predicts Perceived Value of Traveling Light* - Confirmed

A Pearson correlation analysis revealed a moderate, positive, and statistically significant relationship between perceived luggage inconvenience and the value attributed to luggage-free travel ($r = 0.457$, $p = 0.011$), (Table 3: Pearson Correlation).

This finding confirms H5 and shows that travellers who experience higher frustration with luggage naturally assign greater value to Skywear's offering of travelling light. Unlike H4, which measures behavioural adoption, this hypothesis captures a psychological perception of the benefits Skywear provides. (See Appendix 6 – Perceived Inconvenience vs. Value of Travelling Light).

Table 3: Pearson Correlation

Correlation: Inconvenience vs. Value of Traveling Luggage-Free

Variable_1	Variable_2	Correlation	p.value	Confidence.Interval.Lower	Confidence.Interval.Upper
cor Inconvenience carrying luggage	Value of traveling luggage-free	0.457	0.011	0.116	0.702

5.4 Qualitative Analysis from Stakeholders

Following the descriptive findings and hypothesis testing, qualitative interviews were conducted to contextualize the results and inform Skywear's strategic priorities. While the quantitative analysis confirmed that luggage-related frustration is a key driver of adoption intent, it also revealed several uncertainties — particularly around trust, fit, pricing, and the value perception of luggage-free travel. To better understand these behavioural dynamics and refine the service proposition, a series of semi-structured interviews were carried out with academics, retreat organizers, sustainable fashion retailers, and wellness practitioners. These conversations followed an open-ended, dialogic approach (Tracy, 2019), allowing insights to emerge organically while linking stakeholder perspectives with the survey data.

One of the first key insights came from an advisory session with Professor Miguel Duarte, who helped refine Skywear's positioning within the travel ecosystem. Rather than competing with personal clothing, Skywear should act as a complementary travel enhancement, simplifying the journey without replacing the travellers' identity. He also recommended partnering with sustainable fashion brands to build awareness and lower acquisition costs while keeping early pilots focused on a pure rental model. This strategic framing connects directly to the survey results, emphasizing that adoption is less about changing habits entirely and more about solving a clear, concrete problem.

The issue of customer trust emerged repeatedly, particularly around concerns about sizing and style personalization, which the survey had already flagged as a major adoption barrier (71% of respondents expressed fit-related doubts). Professor Francisco Queiro emphasized that first-time users of apparel rental services must feel confident and trust both the quality and correct sizing of the offering. In response, Skywear should begin by designing a smart sizing and recommendation system that collects users' preferences and predicts accurate fits. This

approach not only addresses sizing concerns but also strengthens Skywear's value proposition by creating a more personalized and frictionless experience.

Partnerships also became a central theme in shaping Skywear's operational model. Veruska Olivieri, CEO of the sustainable fashion brand Be We, highlighted that many ethical fashion labels spend more on marketing than production, which positions Skywear as an attractive visibility channel for brands seeking exposure to premium travellers. Furthermore, unsold or past-season inventory could be seamlessly repurposed into Skywear bundles, reducing waste and aligning the business with circular economy principles. These partnerships lower costs, enhance brand credibility, and improve inventory scalability — three pillars that support the MVP's feasibility.

Another critical insight emerged from retreat organizers, who validated Skywear's pivot toward the yoga and wellness segment. Conversations with 4 Elements Retreats and Maco Retreats in Portugal, as well as 5 Elements Retreat in Croatia, revealed audiences primarily composed of women aged 25–50 who are sustainability-conscious, wellness-driven, and open to curated travel experiences. Logistical synergies also became evident: for instance, 4 Elements Retreat organizes weekly Sunday shuttle transfers from Lisbon Airport, creating a natural distribution point for Skywear bundles. In addition, frequent cases of forgotten essentials like towels or seasonal wear reinforced the convenience value of the startup offering and its alignment with travellers seeking simplicity. Operational feasibility was further addressed by Ugo, an Italian retreat operator, who underscored the need for service flexibility across traveller profiles and stay lengths; to prevent bottlenecks, consultations with Laundry Hero Lisbon, a laundry service provider, confirmed the viability of outsourced cleaning and storage during early pilots—minimizing upfront infrastructure while enabling rapid, scalable MVP testing and reliable turnaround.

Finally, insights from Martina Burgos, yoga instructor and retreat participant, reframed

Skywear's appeal as more than just a functional solution to luggage frustration. She identified two key traveller archetypes within this segment: mindfulness-driven travellers, who value simplicity, comfort, and sustainability, and experience-driven travellers, who seek aesthetic curation and "Instagrammable" moments. For these users, Skywear is not only practical but also experiential — a way to discover new brands, feel connected to the retreat environment, and enhance the overall travel experience.

Together, these qualitative insights provide critical depth to the quantitative findings. While the data confirmed that adoption intent is primarily driven by luggage-related pain points, the interviews explain how to turn this insight into an actionable strategy: by establishing trust through personalization, leveraging sustainable brand partnerships, aligning with wellness-oriented communities, and positioning Skywear as both a solution to a concrete problem and a premium experiential upgrade.

5.5 Synthesis of Insights and Strategic Implications

Therefore, to sum up these findings confirm that luggage-related inconvenience is the main driver of adoption, with travellers experiencing higher frustration being nearly five times more likely to try SkyWear. While 80% value luggage-free travel, qualitative insights reveal that attitudes alone are insufficient; solving concrete pain points is key to triggering behavioural intent.

Across both analyses, three priorities emerged: personalization (71% cite sizing concerns → integrate smart sizing tools), pricing alignment (most respondents fall within the €50–€150 range, especially women 25–40), and strategic partnerships with sustainable brands and yoga retreats to reduce costs, increase visibility, and ensure inventory scalability. Retreat organizers

also validated the yoga traveller segment as the ideal starting point, offering operational synergies through centralized delivery hubs like Lisbon Airport.

These combined insights guide Skywear's next steps: target stress-driven travellers, build trust through personalization, leverage partnerships, and test a lean MVP. The following chapter focuses on translating these findings into an operational pilot strategy.

Chapter 6 – CONCEPT DESIGN AND INITIAL IMPLEMENTATION STRATEGY

This third cycle officially presents the Skywear concept, which was developed as a direct response to the travel-related frictions identified in previous chapters. **Skywear** is a travel clothing and essentials rental platform that allows travellers to pre-select items online—such as clothing and personal care products (e.g., sunscreen, shampoo)—and have them ready at their destination. While not a peer-to-peer marketplace, it functions similarly to Airbnb in that it replaces traditional ownership or transport with convenient, location-based access. Nothing is shipped beforehand, and nothing needs to be carried. After the trip, travellers simply return the used items at their accommodation or airport. No laundry, no folding, no excess baggage fees—just travel light and leave with only memories.

The initial implementation is designed to be minimal and testable. Skywear will operate exclusively in Lisbon, with only airport pick-up and drop-off available. Items are manually selected by the team based on trip details such as weather, length of stay, and basic size indicators (e.g., height, weight, and a reference garment).

All logistics will be handled through local laundry partners and the founders' team, who will also temporarily store and rotate the inventory. While the long-term vision involves expansion to other airports, warehousing infrastructure, and smart delivery systems, the initial focus is on feasibility, operational learning, and user feedback. Skywear also offers a potential promotional channel for local sustainable brands, who can provide past-season items in exchange for exposure to international travellers, allowing us to gain inventories at almost zero costs.

The next sections in this chapter outline the first prototype adapted to a yoga retreat context, a pricing comparison with airline luggage fees, a basic unit economic model to assess short-term viability and a sustainability section about circularity and European incentives.

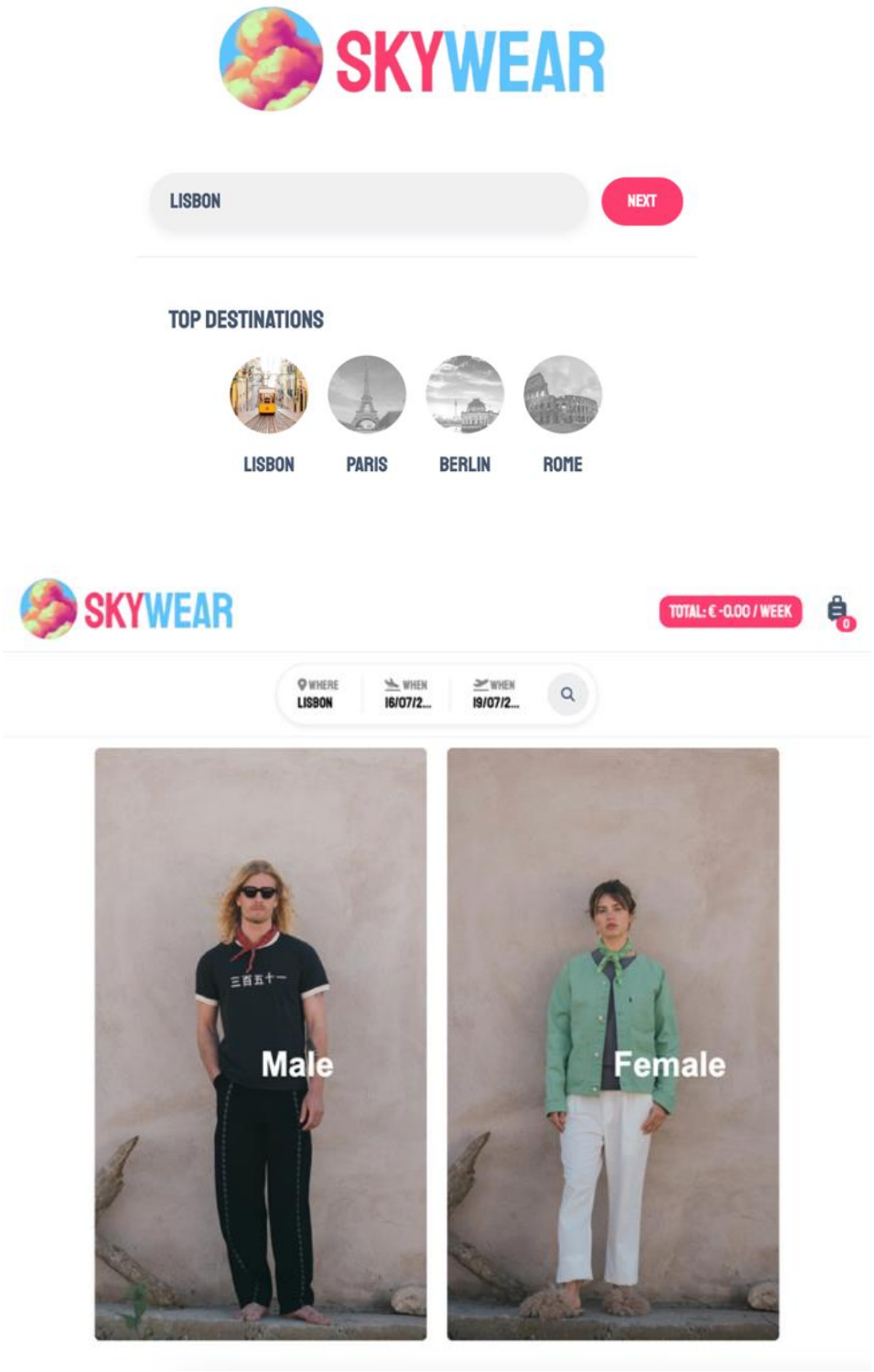
6.1 Prototype Development

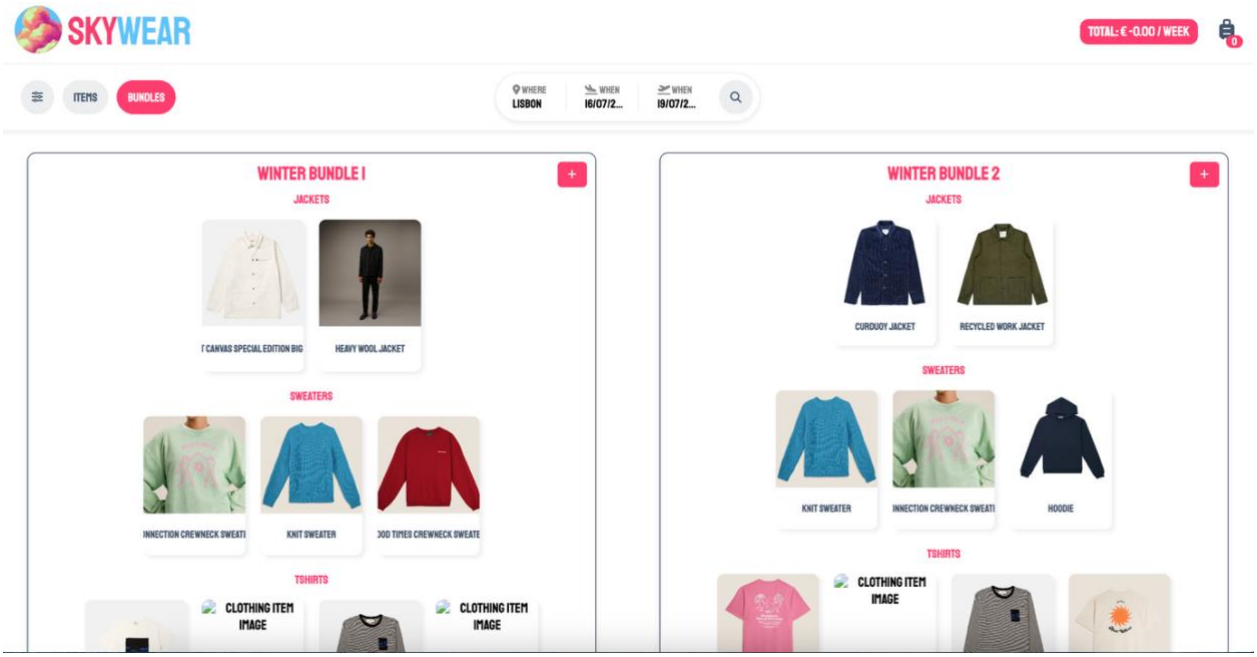
The Skywear prototype has evolved through three key phases. The initial version was a basic test platform built using the founder's personal wardrobe, with manually photographed and edited clothing images to simulate user selection. In the second version, the focus shifted toward collaborating with sustainable brands, leveraging their professional product photography and item descriptions to enrich the platform, creating filters and fast add item button (based on user feedbacks) and begin forming a scalable inventory database (See Appendix 7 – Prototype version 0.1 and 0.2 + User Validation).

The current version **(**v0.3) integrates a bundle selection feature, enabling users to choose curated outfits with just a few clicks, based on trip duration and type. Though still under development, the platform is already fully coded and operational. User feedback has been increasingly positive, being impressed by the fact that the platform theoretically allows you to pack your digital luggage in less then a minute. Thus, suggesting it is approaching a stage

where real-world customer testing can be meaningfully conducted. (Figure 1: Skywear Prototype version 0.3)

Figure 1: Skywear Prototype version 0.3





6.2 Competition and Insights

Despite the novelty of Skywear's concept, it is essential to assess the current landscape of both direct and indirect competitors to better understand the market and refine our approach. Beyond category peers, the threat of substitutes caps willingness to pay and shapes pricing power, so alternatives that solve the same need must be considered alongside traditional rivals (Porter, 1980). While traditional competition is limited, there are a few existing solutions that align partially with our value proposition.

6.2.1 Direct Competition

The only directly comparable service identified is *Anywear Anywhere*, a Japan-based clothing rental startup offering a luggage-free travel experience. While conceptually similar to Skywear, several critical distinctions emerge that shape its competitive positioning. Their operations are geographically limited, focusing exclusively on inbound tourism to Japan,

which restricts their market reach. Strategically, the company emphasizes the use of second-hand clothing which reduces stylistic flexibility and limits personalization. The platform's digital interface also appears underdeveloped, with low-quality visuals, a restricted item selection, and the absence of dynamic outfit bundling, which collectively diminishes the user experience.

To deepen the understanding of their business model, a short-form qualitative interview was conducted with the company's CEO, revealing several insights. The startup remains in a trial phase and faces structural challenges, including inventory shortages and limited brand awareness. Operationally, their logistics depend on outsourced laundry services and reused apparel, aligning with sustainability principles but imposing constraints on scalability. Demand patterns indicate a stronger interest from travellers embarking on longer stays, particularly for winter clothing, often substituting the need for large suitcases. Significantly, the company benefits from the institutional backing of Sumitomo Corporation and Japan Airlines, which provides operational legitimacy and facilitates early-stage adoption. Importantly, the interview confirmed that the value proposition resonates strongly with users, who appreciate the opportunity to avoid carrying luggage altogether.

These findings are highly relevant for Skywear, as they highlight both the viability of the model and its inherent limitations. The challenges *Anywear Anywhere* faces regarding inventory management, sizing, and user experience reveal significant opportunities for Skywear to differentiate itself through a more refined digital platform, greater stylistic versatility, and stronger brand positioning. Thus, differences in scope (geography), product policy (second-hand vs. curated), and positioning reflect distinct strategic choices within the same competitive space—i.e., variants of cost leadership vs. differentiation/focus (Porter, 1980). In this case, Skywear needs to create something which is perceived as unique, trustworthy and cool.

6.2.2 Indirect Competition

Indirect competitors are alternative ways to do the same job (arrive with the right clothes): Blue Ocean analysis recommends scanning alternative industries/solutions, not just category peers, to map real customer choices (Kim & Mauborgne, 2004).

Therefore, beyond direct competition, it is possible to demonstrate that Skywear also faces indirect competitive pressures from three alternative traveller behaviours. First, traditional clothing rental platforms cater primarily to high-end or event-specific apparel, but their limited travel-friendly logistics, lack of context-based curation, and higher price points reduce their relevance for short-term tourists. Second, most travellers continue to rely on bringing their own luggage, yet this choice carries significant inconveniences, including time-intensive packing, high baggage fees, risks of loss or damage, and wardrobe constraints. Finally, purchasing clothing at the destination remains a possible alternative, but it often leads to unnecessary consumption, increased reliance on fast fashion, and valuable time diverted from the travel experience.

6.3 Pricing Analysis: Hidden Luggage Fees and Strategic Positioning

To better position Skywear in the travel ecosystem, an independent pricing analysis was conducted using official websites of three major low-cost airlines—Ryanair, EasyJet, and Wizz Air—for roundtrip flights from Lisbon to key European destinations. The primary objective was twofold:

(1) to reveal how luggage fees impact total ticket costs, and

(2) to identify a realistic and competitive pricing range for Skywear.

Across multiple destinations and time periods (December, March, July), a consistent pattern emerged: while base fares appear low, luggage-related charges significantly inflate the final

ticket price. More importantly, these luggage prices are usually displayed per leg, leading customers to underestimate costs. For instance, a €29 carry-on fee shown at checkout amounts to €58 roundtrip, without the traveller realizing it upfront.

This lack of transparency means luggage fees can represent 40–60% of the total ticket cost. In extreme cases, passengers end up paying more for baggage than for the flight itself—an insight that strongly supports the value proposition of Skywear: eliminating luggage stress while offering a cost-effective, curated experience at destination. This analysis sets the foundation for defining the initial pricing, aligning it with real customer pain points rather than theoretical assumptions.

Through manual tracking and comparison of ticket prices and luggage fees across Ryanair, EasyJet, and Wizz Air, notable patterns were identified that further illustrate the disproportionate cost burden of baggage on final ticket prices. Average additional costs for luggage per round trip were as follows:

- **Ryanair**: €54.14 for carry-on, €79 for checked luggage
- **EasyJet**: €112.36 for carry-on, €107 for checked luggage
- **Wizz Air**: €106.23 for carry-on, €141.67 for checked luggage

To evaluate the true financial impact of these fees, the analysis calculated their average weight as a percentage of the total ticket price [luggage cost / (base fare + luggage cost)]:

- **Ryanair**: 32% (carry-on), 36% (checked)
- **EasyJet**: 50% (carry-on), 49% (checked)
- **Wizz Air**: 40% (carry-on), 47% (checked)

One particularly telling case came from a Wizz Air roundtrip flight from Lisbon to Rome, advertised at €54.98. Adding a 10kg carry-on cost an additional €38.08 each way, resulting in a final cost of €131.14. This means that 58% of the total price was attributable solely to the carry-on. A checked luggage option would have pushed the ticket to over €178, with luggage representing 66% of the total cost.

These figures highlight a clear lack of pricing transparency and demonstrate how airlines downplay true travel costs. Skywear's service is thus positioned not only as a convenience solution, but as a transparent and value-based alternative, offering travellers cost control and clarity.

To complement the low-cost carrier analysis, a secondary comparison was conducted using full-service airlines—Lufthansa**,** Air France, and TAP Air Portugal—on the same Lisbon-based routes. While these carriers typically include more services in their base fares, the total ticket prices (including luggage) on average, were found to be not dramatically higher than those of low-cost competitors:

- **Lufthansa**: €310 with carry-on, €354.82 with checked luggage
- **Air France**: €293.47 with carry-on, €367.93 with checked luggage
- **TAP (Portuguese flag company)**: €180.44 with carry-on, €228.43 with checked luggage

By comparison:

- **Ryanair**: €195.89 (w/ carry-on), €268.13 (w/ checked luggage)
- **EasyJet**: €234.69 (w/ carry-on), €229.98 (w/ checked luggage)
- **Wizz Air**: €281.50 (w/ carry-on), €316.94 (w/ checked luggage)

While legacy carriers offer superior travel conditions and fewer hidden costs, the final prices—especially when luggage is added—are often in a similar range. This further validates a real, monetizable pain point that Skywear could address, especially if its price point is strategically positioned between €54 and €140, aligned with current luggage surcharges.

6.4 Our Initial Price Point – Unit Economics for Testing Phase

At this early stage, precise cost structures—including salaries, infrastructure, or warehousing—are not yet fully defined. However, following the Lean Startup approach, I focused on understanding whether the service could be feasibly tested with minimal resources. Our goal is to validate the concept, support a few initial users, and then iterate based on real-world feedback.

To estimate the cost of providing one week of Skywear service to a customer, the three core cost drivers were identified:

1. **Laundry Services**: Based on current market rates in Lisbon, full-service washing, drying, and folding costs approximately €5 per kg. Assuming an average of 6 kg of clothing per user, this results in **€30 per customer**.
2. **Transportation (Laundry ↔ Airport)**: For initial testing, transportation will be limited to simple pick-up and drop-off between laundry locations and the airport. Based on average local fares and proximity, this cost was estimated at **€10 per order**.
3. **Clothing Amortization**: By collaborating with sustainable fashion brands, the aim is to acquire past-season clothing collections at approximately **30% of their retail price**. For a full one-week wardrobe (approx. 12 items), this translates into a cost of **€272 per set**. These items are expected to be reused between 12 and 15 times. Using

cautious assumptions, the **amortized cost was set at €20[8] per customer**. (See Table 4: Unit Economics)

To summarize:

Table 4: Unit Economics

Cost Component	Estimated Cost
Laundry (6 kg)	€30
Transport (Laundry ↔ Airport)	€10
Clothing Amortization	€20
Total Cost	**€60**

A feasible initial price was therefore identified at a **price point of €90 per user**, yielding a **33% gross margin (€30)**. This margin ensures coverage of initial logistics while allowing room to reinvest in platform development, testing, and future scaling. Additionally, essentials such as shampoo, sunscreen, and creams—sourced from local brands—are planned to be included for free at this stage, in exchange for exposure and product placement opportunities. Now what is left to understand is how can this business model have a positive impact on the world?

6.5 Sustainability: Circular Economy and the Rental Business Success

Circular business models embed principles of long-term resource efficiency, waste reduction, and product lifecycle extension from the outset. Circularity in consumer goods — including clothing and travel gear — focuses on shifting from linear ownership models to systems based on rental, reuse, repair, and recycling, thereby decoupling growth from material throughput (European Commission, 2020; Ellen MacArthur Foundation, 2019). For Skywear, this opens

[8] (€272 / 12 ≈ €22.67; €272 / 15 ≈ €18.13 → midpoint ≈ €20)

opportunities to simultaneously test product-market fit while delivering measurable environmental and economic impact.

In Europe, regulatory alignment significantly strengthens the case for circular entrepreneurship. The EU Circular Economy Action Plan (2020) and the EU Strategy for Sustainable and Circular Textiles (2022) outline explicit goals to make sustainable products the default, with new requirements for durability, reusability, and recyclability. (European Commission, 2022). These policies not only encourage new service-based models such as rental platforms but also provide institutional support through funding schemes and extended producer responsibility mechanisms.

Consumer behaviour trends further reinforce the viability of circular models. The "more users per product" approach increases utilization by facilitating access-based consumption models. According to the Ellen MacArthur Foundation, the latter can enhance product margins and competitiveness by enabling service-based revenue streams while reducing costs through improved resource efficiency and lower risk. (Ellen MacArthur Foundation, 2019)

According to The State of Fashion 2021 by McKinsey and the Business of Fashion, the pandemic accelerated consumer shifts toward digital engagement and reinforced a growing preference—especially among younger generations—for access and experiences over ownership, paving the way for models such as rental, resale, and subscription (McKinsey & BoF, 2021, p. 3). For instance, platforms like Rent the Runway (RTR) and HURR have scaled rapidly by enabling consumers to access high-quality garments without purchasing them, while reducing the demand for new production. RTR reports that its rental model has displaced the production of over 1.7 million garments, with each rental saving an estimated 24% of water use and 6% of energy compared to new manufacturing (RTR, 2025).

For a startup offering clothing and equipment rental to travellers, these converging forces — institutional support, evolving consumer norms, and successful precedents — create a strong foundation for sustainable innovation.

6.6 Follow-Up Actions and Strategic Evolution

As the project evolved, it became increasingly clear that building a scalable logistics solution required real-world testing and stakeholder engagement. A critical next step was identifying how to prototype the logistics layer — the heart of the Skywear concept — and gaining operational trust.

After completing a targeted market and partner feasibility analysis (focusing on brand collaborations, laundry services, and niche segments like yoga retreats), I was selected to join a Lisbon-based mentorship program through the *Università Cattolica* pre-accelerator, following a successful pitch competition. This opportunity allowed for a strategic pivot: rather than attempting to scale the full Skywear model immediately, I focused on solving a more urgent and testable pain point — **lost luggage**.

Upon analysing local search activity, I discovered a lack of service competition around this problem in Lisbon and the Algarve. I developed a dedicated Google Ads campaign and created a focused landing page to test traction. To deepen my understanding of operations, I initiated direct outreach and secured a meeting with Alberto Mota Borges, Airport Director of Faro Airport. During the meeting, I pitched the short-term model for supporting travellers affected by lost luggage, while outlining Skywear's broader vision. The reception was positive, with encouragement to connect with the external ground-handling partner

responsible for luggage logistics. That same day, I visited the airport's assistance desk for lost luggage at Faro's Airport and conducted a spontaneous interview with a Portway[9] employee.

The insights were compelling:

- During peak summer, the airport receives **around 80 lost luggage cases per day**
- Most passengers experience delays **exceeding 48 hours**
- Emotional stress and dissatisfaction are significant, even when the issue stems from airline mishandling
- Affected travellers often **spend heavily** to temporarily replace essential items, from medications to clothing

One particularly illustrative case involved a Spanish traveller flying Vueling who had been in Algarve for an entire week without her luggage — forced to purchase essentials out of pocket and facing uncertainty around recovery or return logistics. This case showed how real travel disruptions, like losing luggage, make Skywear's concept even more relevant. While the project initially focused on yoga retreat travellers, the feedback collected revealed a much more urgent problem faced by a broad group of travellers. As a result, the next step is to start testing Skywear with people who have recently lost their luggage and need an immediate solution. This shift does not represent a change of direction but rather the core of the Lean Startup methodology: learning from real users, adapting based on evidence, and testing new hypotheses as they emerge. By responding to an urgent and validated need, Skywear aligns even more closely with its main goal — reducing travel-related friction and helping travellers access the clothing they need, exactly when they need it.

[9] Portuguese airport ground handling company

Chapter 7 - CONCLUSION

7.1 Purpose and Approach

This thesis re-examined a stubborn friction in European air travel—the cognitive, emotional, and financial burden of luggage—and proposed Skywear, an airport clothing and equipment rental model grounded in Lean Startup and circular economy principles. In line with Lean Startup, progress was defined as validated learning through iterative build–measure–learn cycles (Ries, 2011). Combining Lean Startup with circular-economy guidance lets the venture iterate toward a service that creates value with fewer resources: test access-based bundles, measure reuse rates, and improve recovery with partners. In this way, the model supports EU aims around access-based consumption and closed-loop apparel systems (European Commission, 2020; Ellen MacArthur Foundation, 2019).

A mixed-methods design combined (i) a general traveller survey in Lisbon (n=70), (ii) a targeted survey of yoga/wellness travellers (n=30), and (iii) semi-structured interviews with academics, retreat operators, sustainable retailers, and logistics partners. The goal was to validate the problem, identify an early-adopter niche, and specify an MVP and pricing position that could be implemented in practice.

7.2 Key Findings

1. The luggage burden is measurable and material**.** Travelers reported high packing stress, frequent packing errors (75.7%), and substantial exposure to negative luggage incidents (52.9%). Regression results confirmed **packing time increases stress** ($\beta \approx 0.48$, $p < 0.01$), with a stronger effect for women; age effects challenged assumptions (18–24 not the least stressed; 25–34 lower stress).

2. Adoption follows pain**. Among wellness/yoga travellers**, **higher luggage inconvenience increased Skywear adoption intent** (β≈1.60, OR≈4.97, p<0.10) and **correlated** with the **value of traveling light** (r≈0.46, p=0.011), validating the core thesis. However, the assumption which positive attitudes toward luggage-free travel would translate into service interest was declined, thus personal barriers may limit immediate adoption even if the person finds value in traveling light.
3. Barriers inform the MVP**. Top concerns** were **fit/sizing (71%)** and style alignment (43%)**;** hygiene was surprisingly minor (≈10.7%). Interviews converged on building trust and personalization, motivating smart sizing and pre-curated bundles to cut decision load. Translating barriers (fit, style, trust) into testable features reflects agile business-model innovation in services, where learning cycles reshape the offer rather than the customer (Ghezzi & Cavallo, 2018).
4. Pricing is credible and transparent**. Willingness-to-pay** clustered at **€50–€150** for a 7-day bundle, with women 20–40 showing higher tolerance. Benchmarks showed luggage fees often represent 40–60% of final ticket cost. **A transparent €90/week** anchor yields ~33% gross margin under lean assumptions. Treating willingness-to-pay and unit economics as actionable metrics fits innovation-accounting practice, helping decide whether to persevere, pivot, or pause (Ries, 2011).
5. **Partnerships de-risk execution**. Sustainable brands can supply **past-season inventory** (circular supply + visibility). **Outsourced laundry** and **airport/retreat logistics** (e.g., Sunday shuttles) are operationally feasible, enabling a light-asset pilot.
6. Competitive whitespace exists**.** International precedents (e.g., Anywear Anywhere) confirm viability but leave space in better quality, styling, and bundling—areas Skywear targets.

7.3 Contributions

Academically, the study connects aviation ancillaries and behavioural decision-making with access-based services, showing how unbundled fees, mishandling risk, and packing complexity create measurable disutility that can be addressed by circular, service-led models. It demonstrates the usefulness of Lean Startup in service ecosystems constrained by legacy infrastructure.

Practically**,** the work delivers: a validated early-adopter segment (yoga/wellness), a fully functional MVP, a data-backed pricing thesis, and a partner-enabled operating model**.**

7.5 Limitations

This study faces several limitations that affect the generalizability and depth of its findings. First, the sample size was relatively small, with most interviews conducted at Lisbon Airport, limiting the diversity of perspectives. A broader dataset including travellers from multiple European airports and segments — such as digital nomads, business travellers, and American tourists — would provide a more representative understanding of user needs. Second, the pricing analysis was constrained by time and manual data collection, focusing only on flights departing from Lisbon and excluding a full comparison across European hubs, as well as between low-cost carriers and flag airlines. Moreover, the unit economics analysis relies on rough estimations, as limited operational data required the use of preliminary benchmarks rather than real financial performance. This restricts the accuracy of cost modelling and limits the ability to generalize price dynamics across regions. Third, analysing human behaviour introduces complexity, as traveller decisions are influenced by numerous unpredictable factors; consequently, the regression results, while informative, should be interpreted cautiously. Despite these constraints, the findings remain valuable in identifying patterns and

opportunities, while highlighting the need for broader data collection, expanded geographic coverage, and more robust behavioural insights in future research.

7.6 Future Directions and Next Steps

The findings of this study represent the beginning of a broader journey rather than a completed solution. Consistent with the Lean Startup methodology, the next phase focuses on testing, learning, and iterating to identify the right product–market fit before scaling Skywear into a sustainable, Europe-wide platform (Blank & Dorf, 2012). The immediate priority is to conduct real-world testing with travellers who have recently lost their luggage, as this segment experiences the most urgent and tangible need. These pilots will provide essential insights into the logistical feasibility of the service, including delivery times, bundle design, sizing accuracy, and overall customer satisfaction. Therefore, next steps should run riskiest-assumption tests on the most uncertain parts of the model using small pilots to turn unknowns into measured risks (Eisenmann, Ries, & Dillard, 2011). Once the operational model proves reliable in this reactive use case, the project will expand into a proactive offering targeting travellers before their trips begin. The goal is to reach users at the pre-purchase stage, ideally through strategic partnerships with airlines, travel booking platforms, and meta-search engines like Skyscanner. By integrating Skywear's solution into existing travel touchpoints, it is possible to better position the service as a convenient, cost-effective alternative to traditional packing and baggage fees. In parallel, future research will focus on refining pricing strategies, improving the smart-sizing algorithm, and exploring partnership models with airports, airlines, and sustainable fashion brands to strengthen Skywear's ecosystem. Once the concept demonstrates consistent user demand and operational scalability, the project will be well-positioned to seek external funding and explore potential European Union support under sustainability and circular economy frameworks.

The long-term vision is to create a global platform that enables travellers to pack digitally, faster than anything else in the world, selecting their outfits in advance and finding them ready at their destination. By connecting with local brands worldwide, Skywear aims to build a sustainable ecosystem that reduces unnecessary consumption, lowers environmental impact, and transforms the way people experience travel.

7.7 Closing Remarks

This research has shown that the combination of behavioural insight, lean experimentation, and circular economy principles opens the door to a new approach to travel. By addressing inefficiencies in the current system — from luggage stress to overconsumption — Skywear positions itself at the intersection of convenience, sustainability, and innovation. While significant testing and refinement remain ahead, this study provides the foundation for a solution that not only improves the traveller experience but also contributes to a broader shift toward access-based, resource-efficient consumption in Europe and beyond.

Having said that, I would like to thank all the people who got in contact with Skywear, as well as those who collaborated with me on the project, for their support and insights that helped enrich this work.

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Appendix 1 – General Travellers Survey

Airport Luggage Experience Survey

Please answer the following questions about your luggage experience while traveling.

Section 1: Demographics

1. Age:

- [ ] Under 18 - [ ] 18-24 - [ ] 25-34 - [ ] 35-44 - [ ] 45-54 - [ ] 55+

2. Gender:

- [ ] Male - [ ] Female - [ ] Non-binary/Other

3. Employment Status:

- [ ] Student - [ ] Employed - [ ] Self-employed - [ ] Unemployed - [ ] Retired

Section 2: Luggage Handling Experience

4. How long does it typically take you to prepare your luggage?

- [ ] Less than 30 mins - [ ] 30 mins - 1 hr - [ ] 1-2 hrs - [ ] More than 2 hrs

5. How stressful do you find the process of preparing your luggage? (1 = Very Low, 5 = Very High)

- [ ] 1 - [ ] 2 - [ ] 3 - [ ] 4 - [ ] 5

6. How stressful do you find handling luggage at the airport? (1 = Very Low, 5 = Very High)

- [ ] 1 - [ ] 2 - [ ] 3 - [ ] 4 - [ ] 5

7. When booking a trip, do you feel luggage fees are too expensive?

- [ ] Yes - [ ] No - [ ] Sometimes

If yes or sometimes, do you look for alternative solutions to avoid these fees?

(Briefly explain): _____

8. Can you recall a negative experience with your luggage?

- [ ] Yes - [ ] No

If yes, please describe briefly:

_____

Section 3: Current Luggage Strategies

9. How do you manage the stress of packing and handling luggage for travel?

- [ ] Pack in advance - [ ] Only bring essentials - [ ] Use extra services - [ ] Delegate packing if possibl

10. Have you ever had to pack for multiple people (e.g., children)?

- [ ] Yes - [ ] No

Additional challenges (if any):

_____

11. Have you ever lost a piece of luggage? How did you deal with it?

- [ ] Yes (how managed): _____ - [ ] No

Section 4: Clothing and Outfit Preferences

12. How important is it for you to have your own clothes and outfit options during a trip? (

- [ ] 1 - [ ] 2 - [ ] 3 - [ ] 4 - [ ] 5

13. Would your need for personal clothes change based on the type of trip?

- [ ] Yes - [ ] No

If yes, please explain:

_____

14. Have you ever forgotten something important for a trip?

- [ ] Yes - [ ] No

If yes, how did you manage on arrival?

_____

Appendix 2 – Niche Travellers Survey

Skywear fast survey

1. age

Contrassegna solo un ovale.

- ◯ <20
- ◯ 20-30
- ◯ 30-40
- ◯ 40-50
- ◯ >50

2. gender

Contrassegna solo un ovale.

- ◯ male
- ◯ Female
- ◯ prefer to not say

3. How often do you go on wellness-focused trips (yoga retreat, surf, mindfulness, nature)?

Contrassegna solo un ovale.

- ◯ never
- ◯ less than 1x a year
- ◯ 1x/ year
- ◯ 2-3x/year
- ◯ more than 3x/year

4. What motivates you to attend these types of trip?

Seleziona tutte le voci applicabili.

- ☐ To recharge and reduce stress
- ☐ To work on my physical or mental well-being
- ☐ To experience something new and adventurous
- ☐ because is trendy
- ☐ To meet new people
- ☐ Altro: _____

5. Let's talk packing 🧳 : How long does it typically take you to prepare your luggage? 👇

Contrassegna solo un ovale.

- ◯ less than 30 minutes
- ◯ 30 minutes-1 hour
- ◯ 1 hour - 2 hours
- ◯ more than 2 hours

6. How Stressfull is the process of preparing your luggage?

Contrassegna solo un ovale.

	1	2	3	4	5	
no s	◯	◯	◯	◯	◯	very stressfull

7. How inconvenient do you find carrying luggage through airports, public transport, or during your trip?

Contrassegna solo un ovale.

	1	2	3	4	5	
not i	◯	◯	◯	◯	◯	very inconvenient

8. How valuable would it be to travel without any luggage at all? *As you might know, every flight always includes a backpack... here we talk about* ***traveling without carry on or havier baggage***

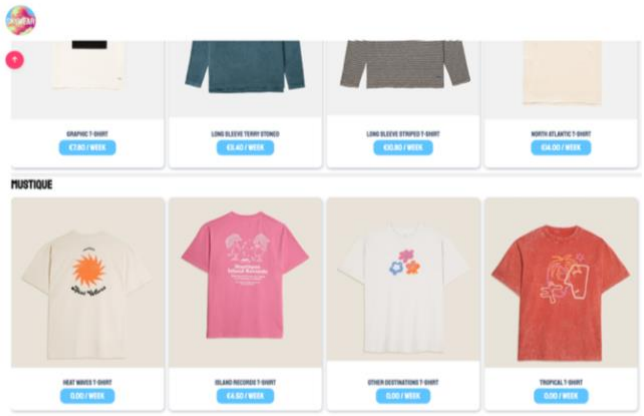
Contrassegna solo un ovale.

	1	2	3	4	5	
no v	◯	◯	◯	◯	◯	very valuable

Skywear service

That's exactly why we created Skywear: **a service that eliminates physical packing by letting you do it all online (just with few clicks on our platform), partners with local brands, and lowers your travel impact.** We deliver your personalized Skybox directly to your retreat—curated outfits ready at your destination.

prototype clothes selection - t-shirts from portuguese local brandsSkyWear website



9. considering the benefits it offers, what would feel like a reasonable price for this service (including clothing + delivery) for a 7-day retreat?

Contrassegna solo un ovale.

- ◯ under 50€
- ◯ 50-100€
- ◯ 100-150€
- ◯ 150-200€
- ◯ over 200€

10. What would hold you back from using this service?

Seleziona tutte le voci applicabili.

- ☐ Hygiene
- ☐ Fits/ Sizes
- ☐ Style
- ☐ None—I'm open to trying it
- ☐ Altro: _____

11. Would you be interested in trying a Skybox for your next retreat or getaway? leave your email and let's keep in contact.

_____

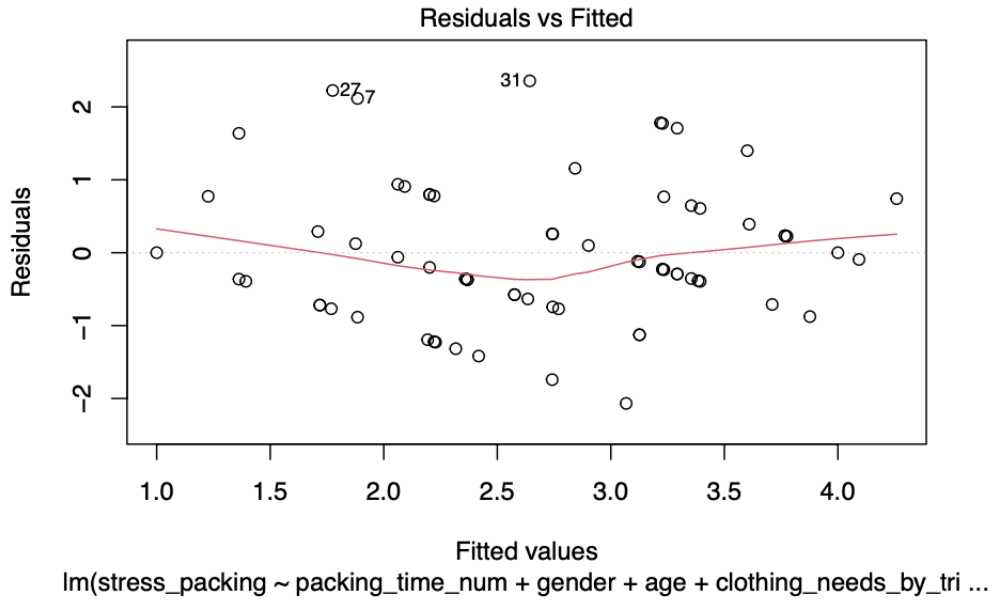
Appendix 3 – Assumptions Diagnostic

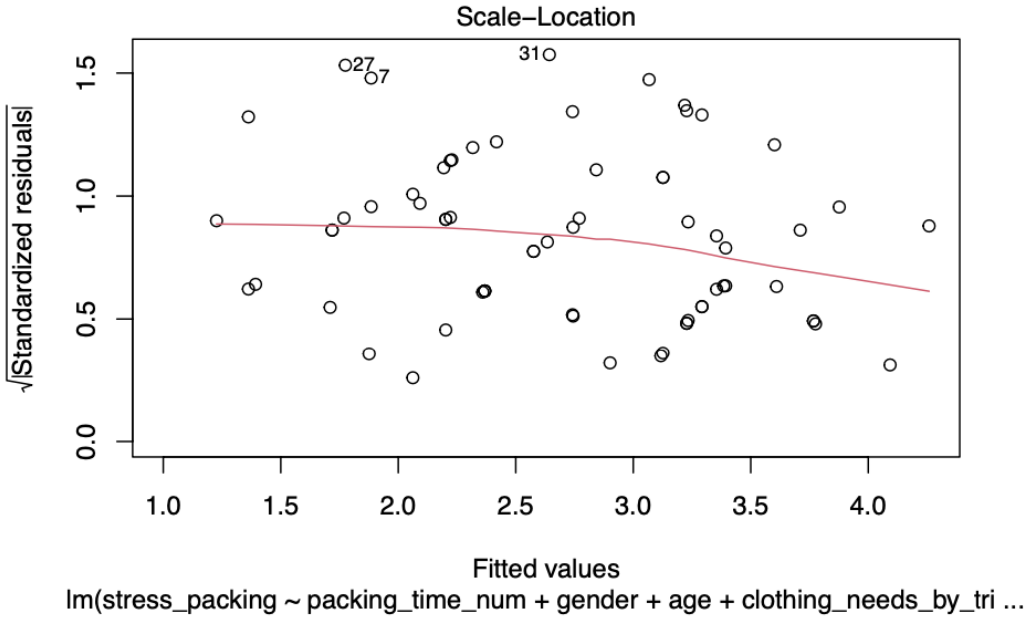
Variance Inflation Factor (VIF) Analysis

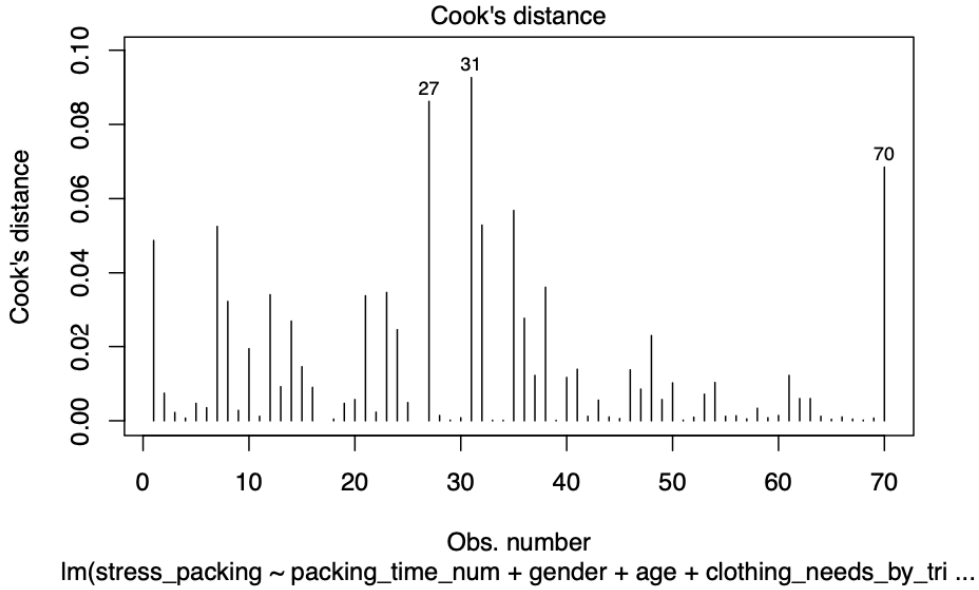
VIF Results Table

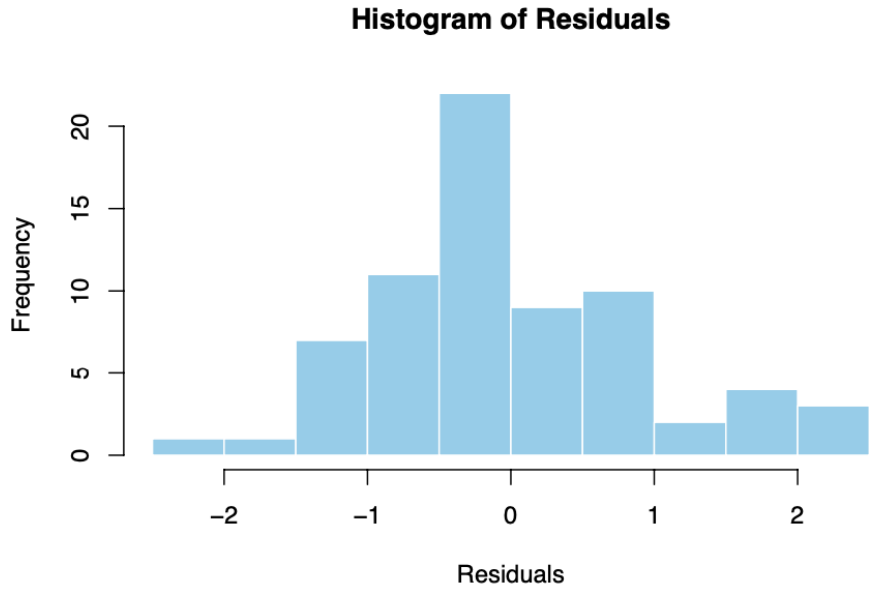
Table 1: VIF Table for Model Predicting Stress While Packing

	Variable	GVIF	Df	GVIF..1..2.Df..
packing_time_num	packing_time_num	1.267	1	1.126
gender	gender	1.257	1	1.121
age	age	1.185	4	1.021
clothing_needs_by_trip	clothing_needs_by_trip	1.062	1	1.030
lost_luggage	lost_luggage	1.059	1	1.029




Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
27
7
31
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Fitted values
lm(stress_packing ~ packing_time_num + gender + age + clothing_needs_by_tri ...


Cook's distance
Cook's distance
0.00
0.02
0.04
0.06
0.08
0.10
27
31
70
0
10
20
30
40
50
60
70
Obs. number
lm(stress_packing ~ packing_time_num + gender + age + clothing_needs_by_tri ...



6. Breusch-Pagan Test for Heteroscedasticity

```
bptest(model_final)
```

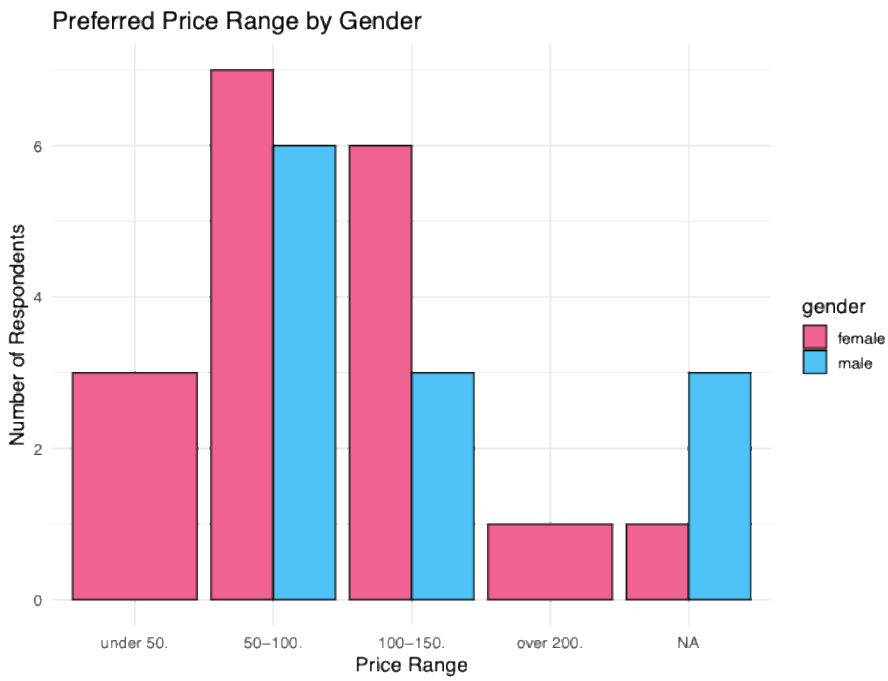
```
##
##  studentized Breusch-Pagan test
##
## data:  model_final
## BP = 6.2345, df = 8, p-value = 0.621
```

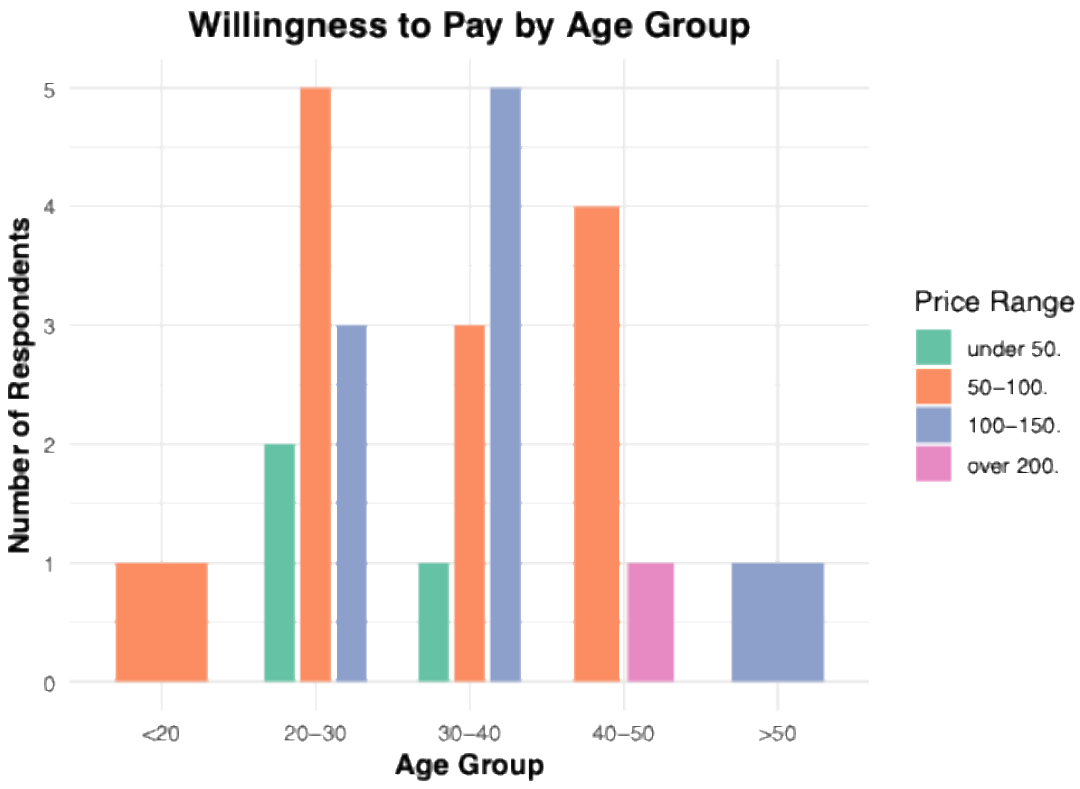
Appendix 4 – Regression Model with Interaction Effects.

Table 1: Model with Interaction Effects: Predicting Stress While Packing

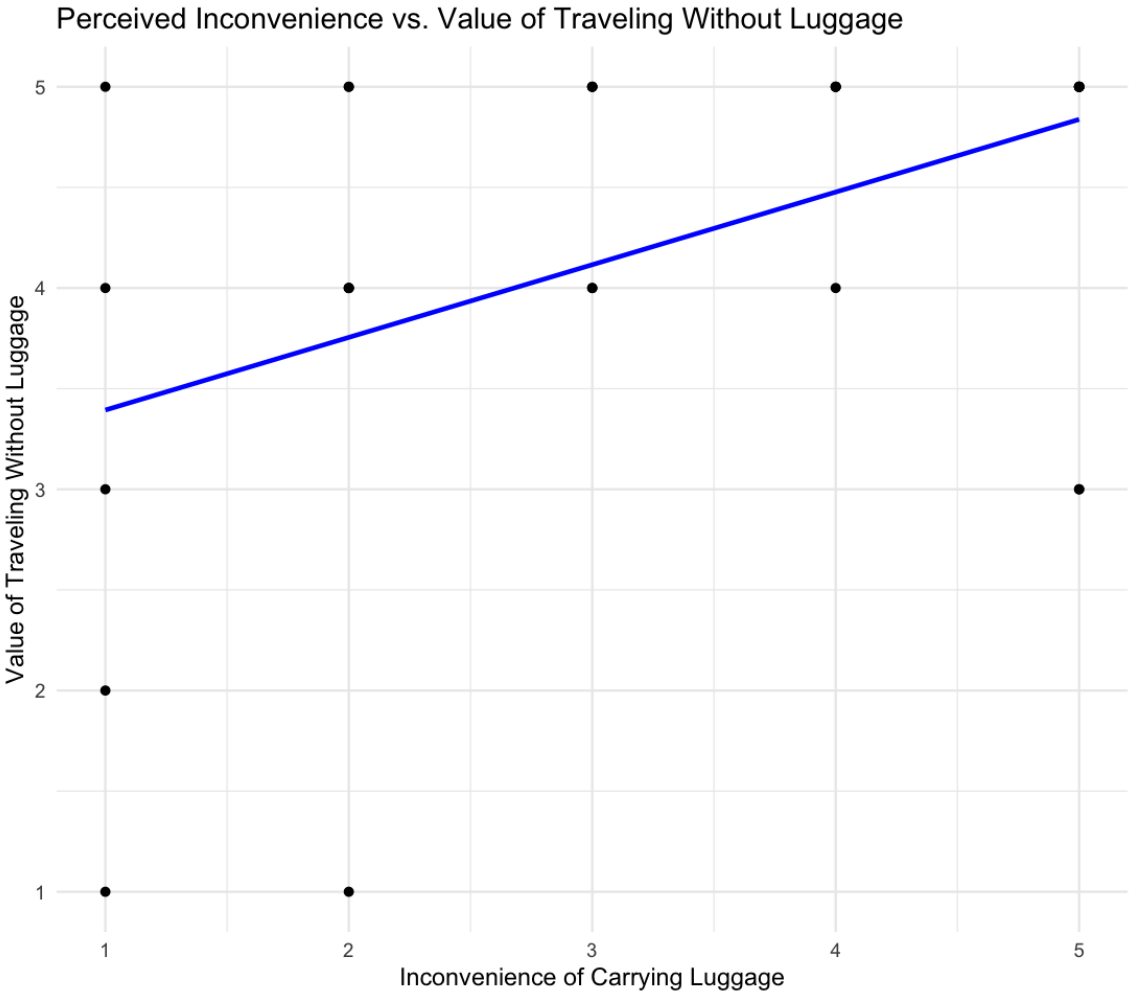
	Dependent variable:
	stress_packing
packing_time_num	0.721***
	(0.177)
genderMale	1.029
	(0.761)
clothing_needs_by_trip	0.774**
	(0.379)
age25-34	−0.300
	(0.375)
age35-44	−0.318
	(0.470)
age45-54	0.029
	(1.041)
age55+	−1.147
	(1.051)
lost_luggage1	0.089
	(0.248)
packing_time_num:genderMale	−0.637**
	(0.297)
clothing_needs_by_trip:age25-34	−0.331
	(0.553)
clothing_needs_by_trip:age35-44	−0.704
	(0.759)
clothing_needs_by_trip:age45-54	
clothing_needs_by_trip:age55+	
Constant	0.945
	(0.576)
Observations	70
R^2	0.442
Adjusted R^2	0.336
Residual Std. Error	0.994 (df = 58)
F Statistic	4.171*** (df = 11; 58)
Note:	*p<0.1; **p<0.05; ***p<0.01

Appendix 5 – Willingness to pay based on Gender or Age.



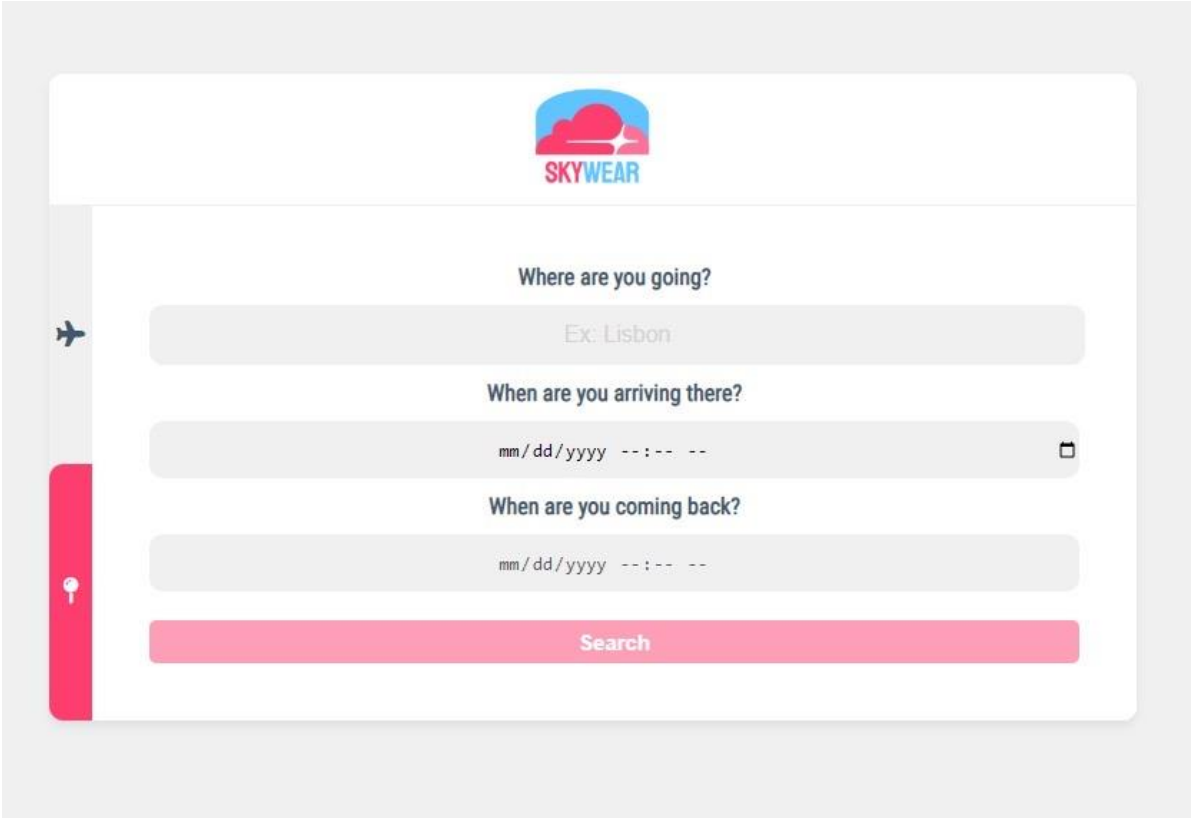


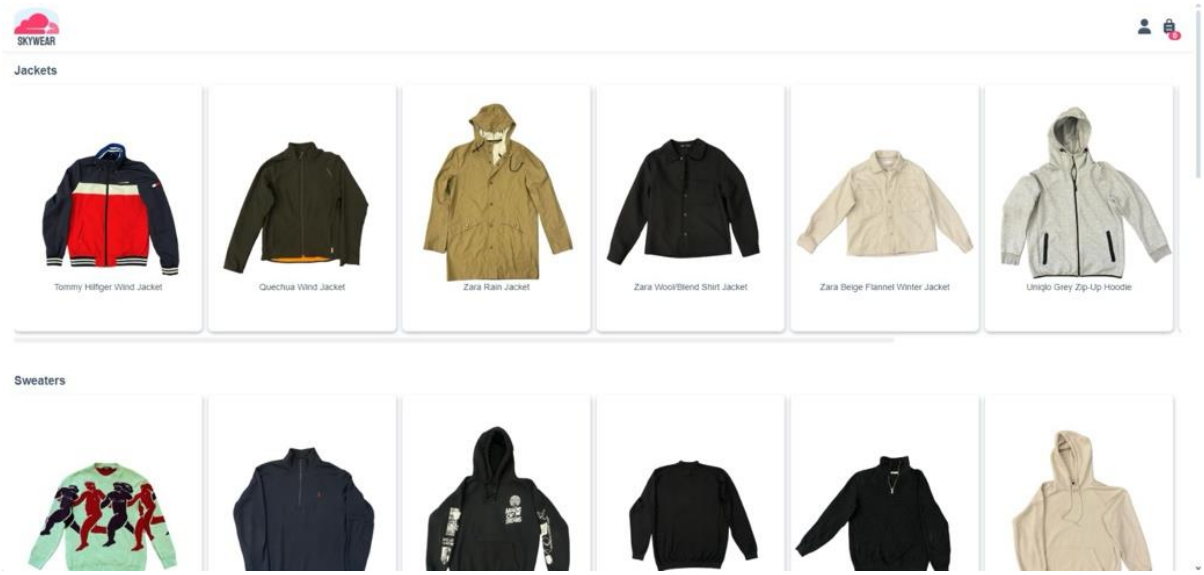
Appendix 6 – Perceived Inconvenience vs. Value of Traveling Light



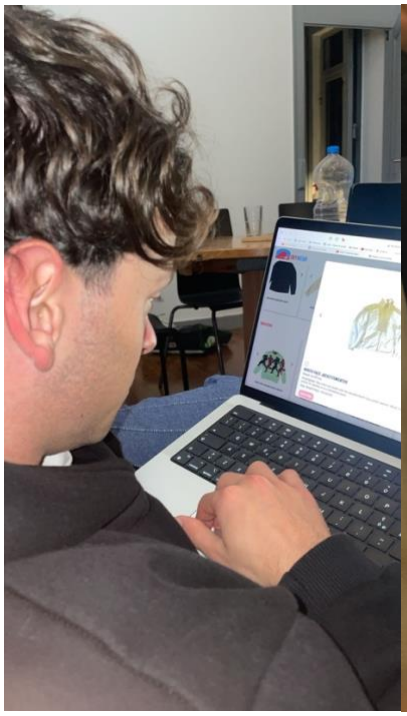
Appendix 7 – Prototype version 0.1 and 0.2 + User Validation

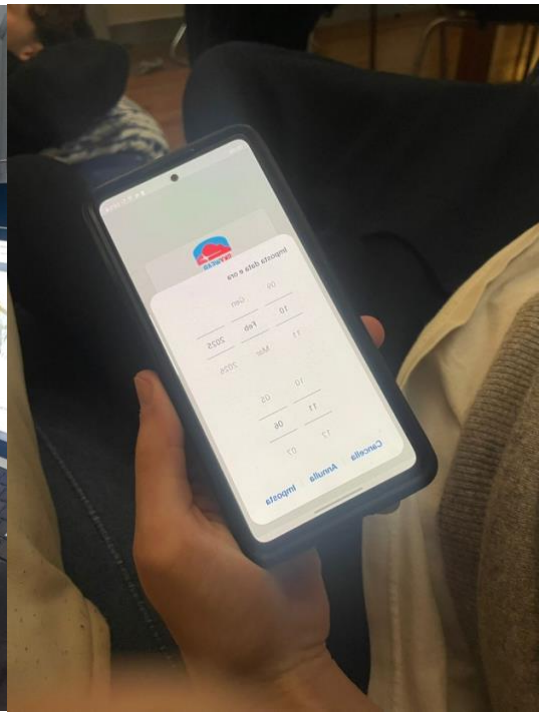
Prototype 0.1 – Initial Inventory Using Personal Wardrobe





User Validation





Prototype v 0.2 – brand pictures + fast add button