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Exploring the Impact of Pricing Model Changes on Digital Platform Business

A Case Study of Company X

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UNIVERSITY OF VAASA**School of Technology and Innovations**

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ABSTRACT:

The Digital platform companies constantly balance between profitability and user growth. On two-sided platforms, where both customers and service providers need to be attracted, even small changes in pricing can have a significant impact on customer behaviour and financial results. As competition increases and operating costs rise, finding the right pricing model becomes not only a strategic choice but also a critical factor for survival.

This thesis examines how a pricing model change affects customer segments and profitability in a digital two-sided platform business. The focus is on case company, operating in the parking industry, which shifted from a fixed monthly service fee to a percentage-based transaction fee. The goal of the change was to better align the platform's revenue with its cost structure and to support long-term financial sustainability.

The study answers two main research questions: How did the pricing change impact customer segments, and which segments are most important for the company's strategy? How did the pricing change affect the company's profitability? A quantitative approach was used, based on transaction-level ERP data before and after the pricing change. Key methods included customer segmentation based on parking frequency, paired t-tests, and Pareto analysis.

The results showed that customer volume slightly decreased in all segments, but service fee revenue increased across all categories. Gross profit margin also improved in every segment, and the paired t-test confirmed that the change was statistically significant. Interestingly, the Pareto analysis did not support the classic 80/20 rule; instead, revenue was more evenly distributed across several customer groups. This suggests that the business is not overly dependent on just one or two segments.

This thesis contributes to the understanding of digital two-sided platforms by combining transaction-based customer segmentation with profitability analysis. The study offers useful insights for pricing strategy development and maintaining customer loyalty in a scalable platform environment. The main limitation of the research is that the results cannot be directly generalised to all digital platforms, as different industries and platform models may vary significantly.

KEYWORDS: two-sides platform, pricing model, service fee, customer segmentation gross profit margin, Pareto analysis

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Tiivistelmä:

Digitaaliset alustayritykset tasapainoilevat jatkuvasti kannattavuuden ja käyttäjämäärän kasvun välillä. Kaksipuolisilla alustoilla, joissa hankitaan sekä asiakkaita että palveluntarjoajia, jo pienetkin muutokset hinnoittelussa voivat vaikuttaa merkittävästi asiakaskäyttämiseen ja taloudelliseen tulokseen. Kiristynyt kilpailu ja nousevat kustannukset tekevät oikean hinnoittelumallin löytämisestä paitsi strategisen kysymyksen myös elinehdon.

Tämä diplomityö tarkastelee hinnoittelumallin muutoksen vaikutuksia asiakassegmentteihin ja kannattavuuteen digitaalisessa kaksipuolisessa alustatalouden yrityksessä. Tutkimuksen kohteena on pysäköintialalla toimiva tapausyritys, joka siirtyi kiinteähintaisesta palvelumaksu mallista prosenttiperusteiseen transaktiokohtaiseen palvelumaksuun. Muutoksen tavoitteena oli parantaa kustannusrakenteen ja tuottojen välistä tasapainoa sekä tukea alustan pitkän aikavälin taloudellista kestävyyttä.

Tutkimuksessa vastattiin kahteen päätutkimuskysymykseen: Miten hinnoittelumuutos vaikutti asiakassegmentteihin ja mitkä niistä ovat liiketoimintastrategian kannalta keskeisimpiä? Miten hinnoittelumuutos vaikutti yrityksen kannattavuuteen? Tutkimus toteutettiin kvantitatiivisella lähestymistavalla hyödyntäen yrityksen ERP-järjestelmästä kerättyä transaktiotason dataa ennen ja jälkeen hinnoittelumuutoksen. Keskeiset analyysimenetelmät olivat asiakassegmentointi pysäköintimäärien mukaan, parillinen t-testi sekä Pareto-analyysi.

Tulosten perusteella asiakasmäärät laskivat lievästi kaikissa segmenteissä, mutta palvelumaksukertymä kasvoi kaikissa kategorioissa. Myös bruttokateprosentti jokaisessa asiakasryhmässä ja t-testi vahvisti muutoksen tilastollisen merkitsevyyden. Mielenkiintoisesti Pareto-analyysi ei tukenut klassista 80/20-sääntöä, vaan tuotot jakautuivat tasaisemmin useampaan segmenttiin. Tämä viittaa siihen, ettei yrityksen liiketoiminta ole riippuvainen yksittäisestä käyttäjäryhmästä.

Tämä tutkimus tarjoaa uutta tietoa kaksipuolisista alustayrityksistä yhdistämällä transaktiopohjaisen segmentointimallin kannattavuus analyysiin. Tutkielma antaa ymmärrystä hinnoittelumallien kehittämiseen ja asiakasuskollisuuden ylläpitämiseen nopeasti skaalautuvassa liiketoimintaympäristössä. Tutkimuksen suurin rajoite liittyy siihen, että tuloksia ei voida suoraan yleistää kaikkiin digitaalisiin alustayrityksiin, koska ne voivat poiketa toisistaan toimialan ja rakenteen osalta.

Avainsanat: two-sides platform, pricing model, service fee, customer segmentation gross profit margin, Pareto analysis

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“It always seems impossible until it’s done.”

- *Nelson Mandela*

Emil Viitala,

In Tampere, 30.3.2025

Contents

1	Introduction	9
1.1	Background of the Study	9
1.2	Research gap, Questions and Objectives	11
1.3	Definitions and Limitations	13
1.4	Thesis Structure	14
2	Literature Review	17
2.1	Description of Case Company	18
2.2	Customer Behaviour in Digital Platforms	19
2.3	Profitability in Digital Platforms	22
2.3.1	Transaction Cost	23
2.3.2	Gross Profit Margin	24
2.4	Fundamentals of Platform Pricing	26
2.5	Customer Segmentation	30
2.6	Research Framework	31
3	Research Methodology	33
3.1	Data Collection Process	33
3.2	Data Analysis Process	34
3.3	Validity and Reliability	37
4	Theory	40
4.1	Case Company X Business Model	41
4.1.1	Old vs New Revenue Model	42
4.1.2	Costs	44
4.1.3	Service Fee Cap	46
4.2	Case Study	48
4.3	Study Contributions	57
4.3.1	Theoretical Contribution	57
4.3.2	Practical Contribution	59

5	Conclusion	62
5.1	Limitations	64
5.2	Future Work	65
	References	67
	Appendices	76
	Appendix 1. Calendar View of Dataset Periods	76

Figures

Figure 1. Model of common two-sided platform companies.	10
Figure 2. The model of buyer behaviour.	21
Figure 3. Company X business model.	43
Figure 4. Old vs new revenue model.	44
Figure 5. Comparison of old and new service fee models.	45
Figure 6. GOGS vs old pricing model in Company X.	47
Figure 7. Service fee cap.	48
Figure 8. Organic growth of Company X's users.	49
Figure 9. Formation of p-value in paired t-test.	55
Figure 10. Comparison of service fees (DS3 vs DS4).	57
Figure 11. Dataset 1: 1.1-14.1.2024.	76
Figure 12. Dataset 2: 1.1-14.1.2025.	76
Figure 13. Dataset 3: 18.1-16.3.2024.	77
Figure 14. Dataset 4: 15.1-15.3.2025.	78

Tables

Table 1. Profit rates of major labor platforms	22
Table 2. Typical transaction fee per Card type	46
Table 3. Customer segmentation per parking frequency	49
Table 4. Calculation results	51
Table 5. Cumulative service fee per category after service fee changes.	55

Codes

Code 1. Calculated field code for customer categorization.	50
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Abbreviations

ANPR – Automatic Number-plate Recognition

ERP – Enterprise Resource Planning

FC – Variable Costs

GOGS – Cost of Goods Sold

GPM - Gross Profit Margin

GTV - Gross Transaction Value

MPS - Multi-sided Platform

VC – Variable Costs

LV – Lifetime Value

1 Introduction

Platform businesses have transformed industries by using digital technologies and innovative pricing models. This study focuses on two sides-based platforms and examines how pricing changes impact business performance through a quantitative approach. Case Company X recently adjusted its pricing model by changing service fees providing a real-life case study. By using statistical methods such as paired t-tests and Pareto analysis this study analyses how these changes have affected the company's operations, customer behaviour and overall business outcomes.

1.1 Background of the Study

The rise of platform-based business models has significantly transformed global industries in recent decades (Zhao et al., 2020). The development of platform companies has shaped modern business strategies and models according to Van Alstyne et al. (2016). In the 1980s and 1990s companies like Microsoft, Intel, Apple and IBM transformed the computer industry by introducing personal computers as one of the first mass market digital platforms (Cusumano et al., 2020).

According to Evans (2016), companies that connect different user groups are called matchmakers. The article explains that these types of businesses have existed for a long time including newspapers and shopping malls. With the rise of the internet digital platforms have been created to connect user groups more efficiently. A platform that connects three or more distinct user groups is referred to as a multi-sided platform (MSP).

In the mid-1990s a second wave of platform companies such as Amazon, Google, Yahoo and Alibaba (Cusumano et al., 2020). These companies used the internet to disrupt industries like retail, travel and publishing. By the 2000s social media platforms like

Facebook, LinkedIn and Twitter enabled new ways for people to connect and for businesses to reach customers according to Cusumano et al. (2020).

Today platform businesses operate in nearly every industry (Cusumano et al., 2020). These factors have helped platform businesses grow faster than traditional ones. For example, Booking.com a platform in the travel industry is worth more than many hotel chains even though it does not own any hotels (Zhao et al., 2020). In the same way Uber and Airbnb have changed their industries by focusing on user interactions and growing their networks instead of owning physical assets (Van Alstyne et al., 2016).

There are a few main types of business platforms based on their core functions two-sided or (MSPs) and innovation platforms with some companies integrating both models. Innovation platforms provide the tools or infrastructure that make transaction platforms possible (Cusumano et al., 2019, pp. 49). Examples of innovation platforms include Amazon Web Services and Apple iOS. This study focuses on two-sides platforms. An example of a two-sides platforms is Airbnb or booking.com. Figure 1 shows the typical structure of a two-sided platform.

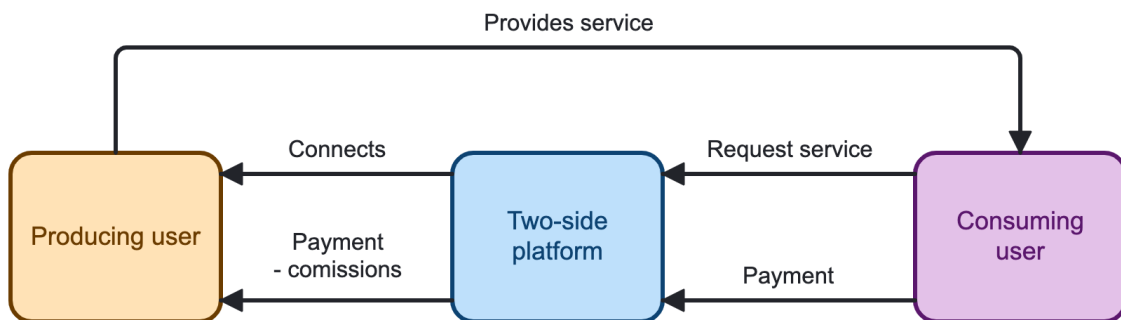


Figure 1. Model of common two-sided platform companies. Adapted from Warnez and Jõesaar, (2018).

The flexibility of these platforms allows for different ways to price goods and services. Choosing the right pricing strategy is important because it affects customer decisions how the platform operates and its profitability (Chang et al., 2021, pp. 1-3). Pricing is very important for platform businesses. It helps attract users, balance supply and

demand and support growth. Platforms use different pricing strategies based on their market and audience. Two-sided platforms must set their prices in a way that makes it attractive and beneficial for both service providers and consumers to join and use the platform (Gao, 2018, pp. 1104-1106).

Netflix and Spotify use subscription models to get regular payments while providing ongoing value to users. Airbnb and Uber use transaction-based pricing, charging a fee for each booking or ride. Platforms like Google and Facebook offer free services supported by ads or charge for extra features (Amaldoss et al., 2023).

Traditional businesses have used pipeline models for a long time where value moves in a straight line from producers to consumers. However, as digitalization grows companies need to change by using platform-based ecosystems to stay competitive. Platforms allow different user groups to connect, create and share value instead of depending on a single provider according to Eisape (2022).

Case Company X has adjusted its pricing model to a transaction-based pricing model. This study focuses on examining the transaction-based pricing model and investigates, through a case study the impacts of this change. Case Company X is a platform company that operates as a two-sides platform.

1.2 Research gap, Questions and Objectives

Pricing models and their impact on business performance have studied a lot particularly in traditional platform companies like Amazon and Google. Modern digital two-sided platforms have received significantly less research attention as they have only recently gained a strong market position due to scalability and network effects. This gap in research is particularly relevant for industries which operating in parking sector, where digital platforms are still appearing and there is limited academic insight into pricing strategies and their impact on customer segmentation and profitability.

Pricing adjustments directly influence customer behaviour and business costs making them a critical area of study. Earlier research has rarely examined customer segmentation and profitability together in the context of pricing changes. This is especially important for Case Company X, which struggles with unprofitable customer segments and high transaction costs. Understanding how different customer groups react to pricing modifications is essential for long-term business sustainability and strategic decision-making.

To address this research gap this study applies a quantitative research approach which has not been widely used in the study of modern digital two-sided platforms. Most research on platform pricing is based on qualitative case studies or looks at well-known industries like food delivery and accommodation services. By using statistical methods such as paired t-tests and Pareto analysis, this research provides a more objective and data-driven assessment of how pricing changes impact both customer retention and financial performance.

A key aspect of this study is the application of Pareto's 80/20 rule which has been mostly used in business and economics but has not been widely tested in modern digital two-sided platforms. Analysing whether a small percentage of customers generate the majority of revenue provides valuable insights into how Case Company X can refine its pricing model and optimize its customer segmentation strategy.

The study focuses on two key research questions to analyse the impact of the pricing change on the company's X operations.

- 1. How has the pricing change influenced the company's customer segments and which of these segments are most critical to the company's business strategy?*
- 2. How did the pricing change affect the company's profitability?*

By addressing these questions, the research seeks to offer a comprehensive understanding of the pricing change's impacts and support the company in optimizing its operations and resource allocation.

The main objectives of this study are:

1. To explore how the company's customer segments have changed as a result of the pricing change.
2. To identify the company's key customer segments for future planning.
3. To analyse how the pricing change has affected the company's profitability, including revenue and costs.
4. To present the findings to the steering group to support decision-making.

1.3 Definitions and Limitations

This section defines key terms to help understand the research focus. Transaction-based pricing is a model where customers pay for each transaction or service separately instead of using a fixed subscription fee according to Larmolenko and Chornous, (2020). Customer segmentation refers to dividing customers into groups based on specific rules such as behaviour, characteristics or revenue contribution.

Profitability is determined by factors such as revenue growth, cost structure, and profit margins. A digital platform business is defined as a company that enables interactions and transactions between users through digital technology (Van Alstyne et al., 2017). This study applies Pareto analysis to find the most profitable customer segments based on their contribution to total revenue and gross profit margin. Pareto analysis is particularly useful for recognizing a company's most important customer segments according to Powell and Sammut-Bonnici, (2015).

The study also examines network effects which describe how an increase in user numbers can enhance the platform's value for all participants (Eisenmann et al., 2006).

Pricing model flexibility is another key topic as the right pricing strategy can improve both customer retention and platform profitability (Parker et al., 2016).

The study limitations help evaluate the reliability of the research and its constraints. The analysis focuses on a two-month period before and after the pricing change which may not provide a full picture of long-term trends or delayed effects. The data is taken from Case Company X's ERP system covering over half a million transaction records which could have minor user errors due to the large dataset. Additionally, the study is limited to the parking industry so the findings may not be directly applicable to other sectors.

The research includes only paid transactions ensuring that the study focuses on customers directly affected by the pricing change. The study applies quantitative methods such as paired t-tests and Pareto analysis which offer detailed insights into customer segmentation and profitability. However, these methods do not consider qualitative factors such as customer experience or market trends. External factors like market changes or competitor strategies are beyond the scope of this research. Recognizing these limitations helps put the findings in the right context and guide future research.

1.4 Thesis Structure

This thesis consists of five main chapters, each addressing a different aspect of the study. The structure ensures a clear understanding of the pricing model change at Case Company X its impact on customer behaviour and how it affects the platform's profitability.

The first chapter introduces the study providing background information, research objectives, key questions and the study's scope. It also defines essential terms related to platform businesses and pricing strategies helping to clarify the research focus. The

chapter outlines any limitations and ensures that the analysis remains targeted on the pricing model change at Case Company X.

The second chapter reviews the existing literature forming the theoretical foundation for analysing the effects of pricing changes on customer behaviour and financial performance. Case Company X operates as a two-sided platform connecting parking space owners and drivers. A key challenge for platforms is maintaining a balance between the two user groups to ensure engagement on both sides (Eisenmann et al., 2006). Pricing is critical to this balance influencing customer acquisition and retention (Parker et al., 2016). Initially, the company used a fixed service fee model with a cap providing predictable costs for users but limiting revenue growth. Because transaction costs increase with total transaction volume the earlier model led to unprofitable customer segments.

Research shows that transparent and predictable pricing builds customer trust while sudden price increases can lead to customer churn (Harmawan et al., 2023). The stimulus response model (Kotler et al., 2018) explains how pricing influences buying decisions highlighting the importance of careful pricing strategies.

The third chapter describes the research approach and methodology explaining why a case study combined with quantitative analysis was chosen. It details data collection the period and dataset structure. The chapter also presents statistical methods such as paired t-tests and Pareto analysis used to evaluate the impact of pricing changes. Finally, it discusses validity and reliability to ensure the credibility of the findings.

The fourth chapter presents the empirical results analysing how the pricing model change affected customer behaviour, transaction volumes and profitability. Case Company X's case study is examined through quantitative data illustrating trends and shifts in user activity. Statistical tests decide whether the changes are statistically significant or random variations. This chapter also includes a study contribution section,

emphasizing the relevance of the findings for both Case Company X and other platform businesses.

The final chapter summarizes key research findings and their strategic implications. It also discusses research limitations and suggests areas for future studies on pricing strategies in platform businesses. Additionally, it provides practical recommendations for Case Company X focusing on optimizing its pricing model to improve customer retention, profitability and overall platform growth.

2 Literature Review

This chapter examines key concepts and theories related to Case Company X's platform business. The literature review explores different pricing models used in platform economies and the factors influencing customer loyalty. It also provides a comprehensive overview of the case company's business model. The chapter discusses profitability in general and in the context of platforms, covering its key principles. It builds on earlier research on digital platforms, transaction costs and consumer behaviour, incorporating insights from Eisenmann et al. (2006), Hagiu (2014), and Kotler et al. (2018).

A major focus is on two-sided markets where platform businesses balance the needs of both service providers and end customers. The literature review discusses how pricing structures shape incentives and why platforms often subsidize one side to drive adoption on the other. Additionally, network effects are examined as a crucial factor in platform success, highlighting the importance of keeping both user groups for long-term sustainability (Kung & Zhong, 2017).

Consumer behaviour in digital platforms is another key topic. The stimulus-response model (Kotler et al., 2018) provides a foundation for understanding how external factors such as marketing and pricing, influence purchasing decisions. Prior studies show that fair and transparent pricing strengthens customer trust and loyalty, while unexpected fees or price increases can lead to dissatisfaction and platform abandonment (Harmawan et al., 2023).

The literature review also considers profitability challenges for digital platforms. Many platforms initially prioritize growth over profitability, relying on external funding to expand their user base (van Eijk et al., 2015). However, as platforms mature pricing adjustments are necessary to ensure financial viability. Case Company X faces similar challenges as its current pricing model affects profitability due to high transaction costs associated with payment processing.

This study uses a quantitative research approach, applying statistical analysis to assess how pricing changes impact user engagement and platform profitability. The goal is to determine whether the pricing model change has led to a statistically significant effect. By analysing numerical data, the study aims to validate the findings related to Case Company X's pricing strategy adjustments.

This chapter provides the foundation for understanding Case Company X's strategic pricing decisions. By exploring platform pricing theories, consumer behaviour models, and profitability strategies, the literature review proves a strong theoretical basis for the empirical analysis in later sections.

2.1 Description of Case Company

This study examines Case Company X using a case study approach. Case Company X is a European platform company operating in the parking industry. Case Company X was founded in 2018. Its mobile app connects parking space owners and drivers making it easy for drivers to find parking spots and giving owners a marketplace to reach customers. The mobile app also works as a platform for processing payments.

Payment services enabled by mobile applications have grown exponentially in recent years according to Lu Lu, (2019). Mobile apps have transformed how transactions are conducted offering seamless and convenient payment options for users according to de Luna et al., (2019), pp 1-3. Case Company X faces a challenge as some customer segments are unprofitable due to the transaction costs associated with payment processing. These costs which are typically tied to the parking fee make certain segments such as frequent or high-cost parkers less viable under the current pricing model. This challenge shows the need to rethink the pricing structure to achieve long-term profitability.

According to Jia (2016, p. 1026), platforms generate revenue by charging service fees to sellers. These fees help keep the platform profitable. While service fees are an essential part of platform business models their structure and functionality are not yet fully understood. Under its previous pricing model Case Company X charged customers a fixed service fee regardless of the parking fee amount. Additionally, the company set a monthly service fee cap, meaning that the service fee was charged a maximum of 10 times per month per customer.

Companies providing payment services such as Visa, Mastercard and Paytrail, price their services based on transaction costs. These costs are calculated as a percentage of the transaction amount. Transaction costs are variable costs (VC) meaning they change depending on the number of transactions (Briciu, 2008).

Poorly executed pricing changes can lead to a significant loss of users and substantial financial difficulties. Studies have shown that even minor fluctuations in customer churn can affect profit margins. Additionally, research shows that price increases can result in higher customer attrition rates as customers become more price-sensitive over time Gholami and Trachter, (2023). Therefore, businesses must carefully consider their pricing strategies to avoid adverse effects on customer retention and financial performance.

In the case of Case Company X production refers to transactions between consumers and service providers. This is one of the main reasons why Company X has decided to change its pricing model. Changing the pricing model introduces a significant business risk making it important to analyse the impacts of the change.

2.2 Customer Behaviour in Digital Platforms

Consumers make multiple purchasing decisions every day and understanding these decisions is essential for marketers. Large companies study consumer behaviour to figure out what, where, how, when and why people buy products. While purchasing

behaviour can be measured, the reasons behind these decisions are often subconscious (Kotler et al., 2018, pp. 158–169).

The stimulus-response model explains how consumers react to marketing efforts. External environmental factors such as marketing, economy, technology, social influences and cultural factors affect buyers, as shown in Figure 2. These factors enter the buyer's "black box," which consists of personal characteristics and the decision-making process. This process includes need recognition information search alternative evaluation, purchase decision and post-purchase behaviour.

As a result buyer responses appear as purchasing decisions what, where and how consumers buy. Consumers also react differently in terms of brand relationships and customer loyalty (Kotler et al., 2018, pp. 158–169). Understanding these processes helps marketers develop effective strategies to influence consumer choices.

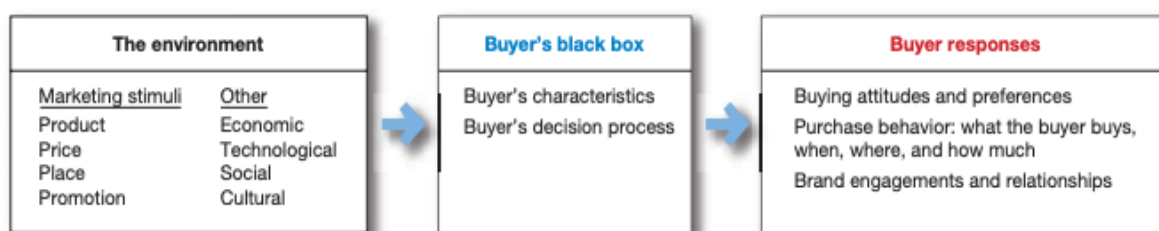


Figure 2. The Model of Buyer Behaviour (Kotler et al., 2018, pp. 159).

Despite the many influences on consumer decisions pricing is one of the most significant factors affecting purchasing behaviour on digital platforms Ali and Anwar (2021 pp, 26-28). The article states that pricing strategy websites are used by young people, who are highly influenced by marketing on these platforms (Ali and Anwar 2021 pp, 26-28). Regardless of cultural social or psychological influences consumers often compare prices across platforms before making a purchase. The pricing model chosen by a digital platform can significantly affect consumer trust, loyalty and overall satisfaction (Harmawan et al., 2023, pp 43-48). Additionally, sudden price changes or extra service fees may lead to dissatisfaction and even cause customers to abandon the platform.

Harmawan et al. (2023) studied customer loyalty and satisfaction in streaming services. The study found that fair pricing has a positive and significant effect on both customer satisfaction and loyalty. Additionally fair pricing strengthens customer loyalty through satisfaction.

According to Zhou et al., (2021, pp. 3-11) platforms that can manage bookings and process payments make it easier for users to start using the platform and improve customer loyalty. When both users and merchants become more engaged due to these extra services their lifetime value (LV) increases. This makes user and merchant acquisition strategies more cost-effective while also increasing the overall platform (LV).

The study results showed that service quality did not have a significant impact on customer satisfaction, while price had a clearly positive and significant effect Asfar and Puji (2021 pp, 202-211). Additionally, the analysis found that the combined effect of service quality and price explains 41.9% of customer satisfaction. The findings suggest that pricing plays a key role in shaping customer satisfaction and accounts for a significant part of its variation.

According to the article by Habibatul and Dandi (2022) there is a strong relationship between price and customer satisfaction. This means that if the price is suitable for consumers they are more likely to be satisfied. There is also a correlation between service quality and customer satisfaction. Factors that affect service quality include the speed of customer service, reliability and the ability to solve customer problems. A company should focus on both competitive pricing and high-quality service to improve customer satisfaction. This encourages customers to return and continue using the company's products Habibatul and Dandi (2022 pp, 300-305). For instance sellers might set a high price for a product but if a cheaper alternative enters the market consumers may feel misled and switch to a competitor (Bolton et al., 2003).

2.3 Profitability in Digital Platforms

Profitability analysis is a crucial tool in business decision-making as it helps companies evaluate their financial performance and ensure long-term sustainability. By assessing revenues, costs and profit margins businesses can identify key drivers of profitability and make strategic adjustments to improve financial outcomes. This is particularly important in a competitive market environment where companies must continuously improve their financial strategies to keep profitability (Alexandru, 2019 pp, 137-141).

Platform companies often start off unprofitable and need to raise their prices after the growth phase to become profitable while investors expect to recover their initial investments once the user base has expanded (van Eijk et al., 2015 p. 24). Digital labor platforms, such as ride-hailing and food delivery services have changed the job market by connecting customers with gig workers through digital technology. Gig workers are individuals who work as independent contractors, freelancers or temporary workers without a long-term job contract with a specific employer. They complete tasks or projects, often through digital platforms that connect them with clients for short-term assignments Vallas and Schor, (2020).

Even though these platforms have grown quickly and become widely used they still struggle to make a profit. Li and Qi (2023, pp. 1–10) studied the financial performance of the ten biggest labour platforms and found that most of them are still operating at a loss (Table 1).

According to the table adapted from Li and Qi (2023) we can see that the gross transaction value can grow rapidly even if the platform company is only a few years old. This suggests that the revenue from transactions is often reinvested to grow the business. According to Suhendra et al. (2025) the growth of gross transaction value from digital economic activity can have a significant impact on boosting economic growth in different regions.

Table 1. Profit rates of major labor platforms. Adapted from (Li & Qi, 2023, p. 3).

Company	GTV in 2021 (billion USD)	Market cap by end of 2022	2016	2017	2018	2019	2020	2021
Meituan	104,1	138,7	-12,1	-4,6	-9,2	2	2,6	-9,6
Uber	90,4	49,3	-19,2	-26,4	-12,6	-27,1	-14,6	-9,9
DoorDash	41,9	19				-30,7	-35,6	-6,9
Didi	34,7	15,4			-8,7	-5,5	-9,4	-31,7
Just Eat Takeaway	30,7	4,6	-11	-19,2	-8,4	-4,7	-10	-5,3
GoTo	30,6	6			-58	-98,3	-33,8	-14,7
Grab	16,1	12,4			-59,9	-23,9	-13,9	-11,1
Delivery Hero	10,4	12,7	-9,8	-11,4	-12,1	-12,5	-8,5	-8,3
Deliveroo	8,2	2			-80,1	-73,6	-34,3	-19,4

The main reason for this is their cost structure. A large portion of their expenses goes to labor costs, customer acquisition and marketing which reduces profit margins. The study identifies two key reasons behind this profitability problem. First one is the way these platforms operate and how they compete. Unlike traditional businesses digital labor platforms use algorithmic management to improve efficiency but they do not actually increase worker productivity making cost control difficult Li and Qi (2023 pp, 1-10). Additionally, strong market competition forces companies to lower prices and offer discounts to attract users, which further weakens their financial position.

Some digital platforms try to minimize losses by expanding their business and establishing monopolies. However, these strategies require significant investments and come with increased financial risks. According to Li and Qi (2023, pp. 1–10), the study concludes that unless digital labor platforms undergo a fundamental transformation, they will continue to struggle with profitability. Instead of merely managing workers, platforms need to leverage technology to enhance productivity and operational efficiency. Without such changes, sustaining long-term financial stability will remain a major challenge (Li and Qi, 2023, pp, 1-10).

2.3.1 Transaction Cost

Transaction costs are the expenses that come from completing a business transaction. These include payment processing fees and other costs related to financial transactions.

In digital platform businesses transaction costs mainly come from fees charged by payment service providers like Visa, Mastercard or other online payment systems. For example, Visa's transaction fees range from 0.2% to 1.6%, depending on the type of payment card used (Visa, 2025).

Transaction costs have a significant impact on a platform's pricing strategy and financial sustainability (Grüschow & Brettel, 2018). These costs reduce the platform's net earnings from each transaction. If transaction costs are high, they can weaken business profitability especially in industries with low profit margins. For example, if a platform takes only a small commission from each transaction a 1% payment processing fee on the total transaction amount can significantly reduce the platform's profitability (Evans & Schmalensee, 2016). Transaction costs related to payments can vary geographically as well as depending on the payment method used.

In the case of Company X the cost of processing payments is based on the total parking cost. This means that for expensive parking transactions, the payment processing costs can be very high. The formula for calculating the payment transaction cost is:

$$\text{Payment transaction cost \%} = \text{Total parking cost} * \text{Payment system fee \%} \quad (1)$$

Grüschow and Brettel (2018) studied about 29 million real sales transactions. Their research found that payment processing costs vary across European countries. The results showed that cultural differences affect customers' payment schedules, which influences retailers' transaction costs when offering online payment services. Airaksinen, O (2022) analyzed data from the Bank of Finland. The study showed that payment processing costs in Finland are lower than the European average.

2.3.2 Gross Profit Margin

A company needs to make steady profits use resources wisely and adjust to market changes to stay financially strong. Profitability analysis helps businesses check their financial health find problem areas and make better decisions about pricing, investments and operations according to Alexandru, (2019, pp. 137–141). Companies

that track profit margins and financial indicators can create strategies for long-term growth and stability.

According to Narsiwari and Nugraha, (2020) the gross profit margin is the percentage of revenue that is still after accounting for the cost of goods sold (COGS). A higher gross profit margin shows that a company has lower relative costs associated with producing or selling its goods, which can be a positive indicator of financial health. The formula for calculating the gross profit margin is:

$$\text{Gross profit Margin} = \left(\frac{\text{Net Sales} - \text{GOGS}}{\text{Net Sales}} \right) * 100\% \quad (2)$$

Net sales mean total sales (or gross sales) minus discounts, refunds and returns Borshell and Dawkes, (2009, pp. 8-10). In Case Company X, net sales come from the service fee, which is charged per transaction. The assumption is that net sales in euros will increase because of the service fee change. Net Sales Total can be calculated using the following formula:

$$\text{Net Sales Total} = \text{Service fee} * \text{Customer Transactions} \quad (3)$$

Dewi et al., (2021) define Cost of Goods Sold (COGS) as the expenses associated with the production and acquisition of sold goods. In a traditional trading company COGS is calculated as:

$$\text{COGS} = \text{Beginning Inventory} + \text{Purchases} - \text{Ending Inventory} \quad (4)$$

COGS can be expressed for Company X's platform needs using the following formula:

$$\text{COGS in Company X} = \text{Payment Transaction Cost \%} + \text{Payment Fixed Cost} \quad (5)$$

In case company X transaction costs are variable costs (VC) because they change depending on the number of transactions. Infrastructure costs are fixed costs (FC) because they stay the same no matter how many transactions occur. The service fee change had no effect on infrastructure costs.

At Case Company X a service fee cap was in place meaning that customers were charged the service fee only up to 10 times per month. Frequent users benefited from this as they did not have to pay service fees for additional usage after reaching the limit. From Case Company X's perspective this cap affected costs as it limited the total service fee revenue from high usage customers.

Removing the service fee cap is expected to increase revenue since a service fee can be charged for every transaction. However, the cap may have been a reason some customers chose to use Company X's platform. As Harmawan et al., (2023) says unexpected pricing changes can affect customer loyalty. Removing the cap could lead to customer loss which could negatively affect total sales.

2.4 Fundamentals of Platform Pricing

Many studies emphasize that pricing is a crucial factor in the success of platforms. On a two-sided platform pricing influences both service providers and customers shaping their willingness to participate. Eisenmann et al. (2006) highlight that pricing is one of the most critical strategic decisions for a platform as it determines how value is distributed between different user groups.

According to Ghazawneh (2012) platform businesses must find a balance between two key goals keeping control of the platform themselves or designing it to scale by allowing third-party involvement. Hagiu (2014) states that if a platform connects three or more distinct user groups, it becomes a multi-sided platform (MSP).

Evans and Schmalensee (2013), and Tiwana (2014) highlight that pricing strategy is an essential part of platform governance. This strategy determines how many user groups are charged and on what basis. Platforms can choose to charge all user groups or only one side, and the pricing can be based on access to the platform or usage levels. These decisions play a crucial role in the platform's revenue model and ability to attract users.

Platform operators must set prices for both sides while considering their growth potential and ability to pay. It is common for one side to be subsidized as attracting many users often leads to greater engagement from paying customers (Eisenmann et al., 2006). Hagiu (2014, pp. 72–80) supports this by saying that pricing is a fundamental success factor for digital platforms. While pricing is crucial in all businesses Eisenmann et al. (2006) argue that it is even more important for platforms as their business model relies on balancing the interaction between multiple user groups.

Eisenmann et al. (2006) also discuss the first-mover advantage, noting that being the first to enter a market does not always guarantee success. Late movers can receive help from learning from early adopters' mistakes and refining their approach. Platforms typically aim for rapid user acquisition but growing too quickly can be risky if the business model is not easily scalable or if market conditions shift unexpectedly.

Pricing directly affects early-stage user acquisition. If joining a platform is too expensive for one side both sides may be affected leading to a situation where neither provider or customers participate. For a platform to be successful it must ensure that both sides reach a critical mass allowing interactions and transactions to occur efficiently.

A study by Hagiu (2009) shows that the more users and service providers a platform attracts the more valuable it becomes for everyone involved. As user numbers grow the platform becomes more attractive enabling operators to increase fees for access or usage. This aligns with the platform value model where users perceive higher value after making a purchase or engaging with the service. Additionally, Hagiu (2009) finds one of

the biggest challenges for platforms as deciding how much to charge each user group to maximize revenue while maintaining a balanced ecosystem.

A platform company often prioritizes growth over profitability in its early stages, which is a common strategy among most platforms (Parker et al., 2016, pp. 55-58). As noted by van Eijk et al. (2015, p. 24) many platform-based businesses operate at a loss in their early phases due to high user acquisition costs and technology development expenses. The decision between two pricing strategies either maximizing immediate revenue or prioritizing long-term market penetration depends on factors such as market competition and how unique the platform's business model is. According to Hagiu (2014), even if a company holds a monopoly position and has an innovative business model, it cannot always charge full prices immediately. Doing so may slow down user adoption, making it harder to attract enough users to create a self-sustaining platform ecosystem. To succeed, platforms often choose to subsidize one side of the market ensuring enough participants to attract the other side.

The chicken-and-egg problem as described by Parker et al. (2016), is one of the biggest challenges platform businesses faces. This problem refers to the difficulty of growing both sides of a two-sided market simultaneously buyers will not join unless sellers are present and sellers will not take part without buyers. Platform providers must decide whether to dominate the market alone or collaborate with competitors by sharing the platform. Exclusive control can yield monopoly profits but a shared platform can increase market size and adoption rates (Parker et al., 2016). Achieving exclusive control requires strong cost advantages a well differentiated service trusted brand reputation and a solid financial base (Eisenmann et al., 2006). Entering the market aggressively without a clear competitive edge may be risky especially if scaling the business proves difficult or if financial markets become less favourable for growth focused businesses.

Kung and Zhong (2017) examined the challenges and benefits of platform pricing strategies highlighting the importance of network effects. The success of platform-based

delivery services such as UberEATS depends on user volume. As the number of buyers increases, more service providers join the platform, and vice versa. This interdependency reflects Parker et al., (2016) chicken-and-egg problem model where a platform only becomes valuable when both sides of the market reach critical mass Aloui and Jebbi (2022). Since pricing decisions for one group affect the other, they are not independent due to the interconnected nature of network effects. Dou et al., (2020, pp. 131–140) stress that platforms should consider indirect network effects when developing pricing strategies as pricing for one user group influences demand and perceived value for the other. For example, if a platform reduces prices for active users it can attract more service providers which in turn increases the overall value of the platform for all users.

Company X has gained new customers by partnering with large parking space owner. These owners have brought their products to the platform making it more attractive to customers. However, to get these providers to join Company X had to offer financial incentives, meaning they covered some of the costs to keep them engaged. According to Eisenmann et al. (2006) this follows a common strategy in platform businesses, where one side of the market is subsidized to help the platform grow and succeed in the long run.

According to Bimpikis et al. (2024) platforms that offer financial incentives to attract service providers can achieve the same goal by managing information without reducing their commission revenue. The study shows that information design has a significant impact on both platform earnings and customer benefits. For example, service providers can be given an interface where they can view information about their business. This could include sales statistics and customer feedback helping them improve their operations and increase revenue.

The service fee cap has also been a way for Company X to attract frequent parking customers. These customers in turn have been valuable to service providers. According to Kung and Zhong (2017), this allows the platform to provide incentives for both parties

to remain as users. From Company X's perspective customers who often make high-cost parking transactions have been unprofitable because payment transaction costs are based on the total parking value while the service fee has remained fixed.

This may have led to a situation where the costs of payment processing exceed the revenue generated from the service fee. Company X has pursued growth while keeping a focus on profitability. Case Company X's platform has generated value for both user groups, enabling the company to shift its strategy towards enhancing profitability alongside growth.

2.5 Customer Segmentation

Customer segmentation is an essential approach for businesses looking to understand customer behaviour and optimize their services. By grouping customers based on shared characteristics, behaviours or preferences companies can create more effective marketing and pricing strategies. Traditional segmentation models often rely on geographic and behavioural data but in digital services behaviour-based segmentation provides more precise and actionable insights Osakwe et al., (2023, pp. 1-15). This is especially important for service platforms where transaction frequency and customer loyalty decide a user's value to the platform.

Behavioural segmentation has become increasingly important with the rise of digital platforms and data driven services. Pawełszek (2021) suggests that segmentation can be improved by using activity-tracking applications which allow businesses to personalize recommendations and offers based on real user behaviour. Digital footprints such as purchase history, frequency of use and service engagement levels help create detailed customer profiles. For example, fitness platforms categorize users based on activity levels while e-commerce platforms segment customers based on shopping habits. Similarly, parking and mobility services can classify users based on how often they park where they park and their transaction behaviour.

The effectiveness of segmentation depends on clearly defining categories and ensuring they align with business objectives. Categorizing customers based on their monthly transaction frequency can offer valuable insights into customer loyalty, pricing sensitivity and service dependency (Pawełszek, 2021). Understanding these patterns helps businesses refine their strategies and better serve different user groups.

Data driven segmentation also supports predictive analytics allowing companies to expect customer behaviour and adjust their strategies accordingly. Pawełszek (2021) highlights that classification and clustering models can further enhance segmentation by identifying meaningful insights from large datasets. Classification algorithms can distinguish between occasional and loyal customers while clustering methods reveal hidden similarities among different users. This enables businesses to offer more personalized services allocate resources more efficiently and improve the overall customer experience.

Customer segmentation also plays a crucial role in pricing model optimization. Osakwe et al., (2023) emphasize that different customer segments react differently to price changes making it essential to analyse their sensitivity to various pricing strategies. Frequent users may be less price sensitive and prioritize service quality and convenience, while occasional users may be more influenced by discounts and promotions. In platforms where service fees play a key role removing service fee caps can have a significant impact on high frequency users making the pricing change more noticeable for them.

2.6 Research Framework

At the core of this research is the theory of two-sided markets which highlights the interdependence between service providers and customers on a platform. The study

examines how pricing structures affect user incentives and how platforms balance the needs of both service providers and end customers. Hagi (2014) states that platforms often subsidize one side of the market to increase participation on the other which aligns with Company X's strategy. By offering financial incentives to service providers the company aims to attract key stakeholders driving consumer adoption.

The study also looks at network effects which play a key role in a platform's success. Kung and Zhong (2017) highlight that platforms need to keep both service providers and customers motivated to stay active. This research explores whether Company X's new pricing model affected user engagement and whether any adjustments are needed to support long term profitability.

Understanding customer behaviour is essential for platform business success. Kotler et al., (2024, pp. 194–200) explain that digital platform consumer behaviour is shaped by cultural, social, personal and psychological factors. While companies cannot directly control these factors understanding them is key to optimizing customer experience and developing effective marketing strategies. Ali & Anwar (2021, pp. 26–28) highlight that pricing is one of the most significant factors influencing consumer purchasing decisions on digital platforms. Pricing strategies can significantly affect customer loyalty and satisfaction, which in turn affects their decision to continue using the service. Harmawan et al., (2023, pp. 43–48) show that fair pricing not only increases customer satisfaction but also strengthens loyalty. On the other hand, sudden price changes or extra fees can make users unhappy and even lead them to stop using the platform.

This research framework serves as the foundation for the empirical analysis presented in later sections. By systematically examining the relationships between pricing, network effects and profitability this study aims to provide insights into how platform businesses can refine their models to enhance user engagement and financial sustainability.

3 Research Methodology

The study employed a quantitative research method which emphasizes numerical, mathematical and statistical analysis while focusing on objective measurements. In quantitative research data is analysed to explain phenomena or generalize about specific groups of people. Quantitative data analysis is not just about figuring out a p-value. It involves understanding relationships within the data and connecting these relationships to the research context (Albers, M., 2017, p. 215–233).

3.1 Data Collection Process

The data for this study are collected from the Case Company's internal Enterprise Resource Planning (ERP) system which is used to manage business processes, financial data and operational transactions. The raw data was gathered over two equal-length periods to ensure fair comparison. It includes license plate information, the number of transactions and transaction prices. According to the Data Protection Ombudsman's statement, license plate information is considered personal data (Finlex, 2000 Personal Data Act: 3.1 §, 3.5 §). This study follows the company's established data protection practices and for privacy reasons license plate numbers used for user categorization cannot be shared publicly.

The first dataset is transactions under the old service fee pricing model and was collected from January 15, 2024, to March 15, 2024. The second dataset was collected immediately after the pricing model change covering the same dates a year later from January 15, 2025, to March 15, 2025. This dataset provides insights into the direct effects of the new pricing model. In total, approximately 700,000 transactions were recorded, offering a comprehensive sample of Case Company's business operations.

An analysis of Case Company's internal ERP data before the service fee change revealed organic growth driven by new investments and an expanded service offering from

parking providers. To ensure that this organic growth does not distort the pricing model impact analysis it has been eliminated from the dataset. The organic growth adjustment was made by comparing two periods before the service fee change: January 1, 2024 – January 14, 2024, and January 1, 2025 – January 14, 2025. This approach ensures that the observed changes in transaction volumes and revenue are attributable solely to the pricing model adjustment rather than unrelated growth factors.

3.2 Data Analysis Process

The data for this study was collected from Company X's ERP system to analyse the impact of pricing model changes on Company X's business operations. There is no specific target group in this study, as the dataset includes all customers who completed a paid transaction on Company X's platform during the measurement period. According to Liozu, S. (2021), data obtained from ERP systems enables better evaluation of business performance and supports strategic decision making.

The first step in the data analysis process is to extract two raw datasets from Company X's internal ERP system. The dataset 1 covers the period 1.1–14.1.2024, while the second dataset covers 1.1–14.1.2025. These datasets are used to eliminate organic growth ensuring that the data is comparable. Both datasets have approximately 100,000 transactions. By comparing dataset 1 and dataset 2 the organic transaction growth rate can be determined. The growth rate is calculated using the following formula:

$$Growth\ Rate = \frac{Data\ set\ 2 - Data\ set\ 1}{Data\ set\ 1} * 100 \quad (6)$$

Next, the main datasets are retrieved. Dataset 3 covers the period 18.1–16.3.2024, while dataset 4 covers 15.1–15.3.2025. The dataset dates have been selected to include an equal number of weekdays and weekends to minimize variations caused by external

factors. Both datasets have over half a million transactions. However, the exact number of transactions is not showed in this study due to business confidentiality.

Before analysis, organic growth must be eliminated from dataset 4. Once the Growth Rate is determined dataset 4 can be adjusted using the following formula:

$$\text{Adjust Data set 2025} = \frac{\text{Data set 4}}{1 + \text{Growth Rate \%}} \quad (7)$$

Next, the comparable datasets 3 and 4 are uploaded into Tableau software, which is used for data analysis and visualization. Tableau allows for predictive analysis of large datasets and the creation of visual reports (Bibhudutta, 2019). The software is also used to categorize the data into 10 different groups based on user activity levels.

Once datasets 3 and 4 have been categorized it is possible to determine the total service fee revenue generated by each category as well as the number of customers in each group. GPM can be calculated for each category. The datasets also include information on the average parking duration per category offering further insights into customer behaviour.

A paired t-test is a statistical method used to compare the averages of two related groups, where each observation in one group has a matching observation in the other group (Shier, 2004). This method is especially useful when measurements are taken from the same subjects under different conditions. It is also commonly used to compare two different ways of measuring or two treatments on the same subjects, such as checking blood pressure with a stethoscope and a digital device. Because the test considers the natural pairing of observations, it reduces variation and improves the accuracy of comparisons between two situations. Liptáková (2021) also supports Shier's (2004) finding.

For each category, the percentage change between the number of customers and the total service fee is calculated. The percentage change is calculated using the formula:

$$\text{Percentage Change} = \left(\frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} \right) * 100\% \quad (8)$$

Old value means the service fee or number of customers before the change. New value means the total service fee or number of customers after the change. When we have the percentage change for each category, we compare the percentage changes in service fees and customer numbers using a paired t-test. The mathematical formula for the paired t-test is:

$$t = \frac{d}{s_d \sqrt{n}}, \quad (9)$$

where d is the average difference between the percentage changes. s_d is the standard deviation of the differences and n is the number of observations. In this study, the number of categories is 10.

The categorized datasets can now be compared. To assess whether there has been a statistically significant change. According to Shrestha (2023) the p-value is a statistical measure used to determine whether a change is statistically significant or if it is likely due to random variation. If the p-value is less than 0.05 ($p < 0.05$) the change is considered statistically significant meaning that there is a meaningful difference before and after the event and the result is unlikely to be caused by chance. On the other hand if the p-value is greater than 0.05 ($p > 0.05$), the change is not statistically significant, suggesting that the observed difference may be due to random variation rather than a real effect. This interpretation is used in statistical hypothesis testing to assess the reliability of research results. Majumder and Maheshwarappa (2023) also state in their article that the p-value is a key statistical tool in hypothesis testing.

According to Loan and Mushtaq (2023) the Pareto 80/20 rule is defined as a principle of imbalance where 20% of causes generate 80% of results. While it is not a precise

mathematical law its applications are widespread across economics, business, information technology and academic publishing. The Pareto theory was originally developed by economist Vilfredo Pareto, who observed that 80% of the land in Italy was owned by just 20% of the population. He also found that 80% of production usually came from only 20% of companies. Based on these observations, he formed a general idea that 80% of results come from 20% of the factors or causes that influence them (Alkiayat, 2021).

This study aims to determine whether the Pareto 80/20 rule applies to Company X's platform economy. According to this rule 20% of customers should generate 80% of the total revenue. Although there is a lot of research on Pareto analysis, there are few scientific studies that test it on two-sided platform companies in the growth phase. This makes the data analysis in this study especially important.

3.3 Validity and Reliability

Research is often evaluated based on the reliability and validity of its methods and processes. Reliability refers to the consistency of measurement results while validity refers to whether the research truly measures what it intends to. According to Cozby (2015, pp. 99-106), these concepts are crucial in research evaluation.

In quantitative research, validity and reliability are key to ensuring that results are credible and replicable (Inyang, 2017, pp. 6-8). While systematic research design and adherence to academic standards form the foundation of research quality, validity and reliability act as essential tools for verifying the credibility and consistency of findings. Inyang (2017, pp. 6-8) defines reliability as the ability of a measurement tool to produce the same or similar results each time it is used under the same or similar conditions.

Validity ensures that research conclusions are correct and applicable to the research context. Construct validity assesses how well selected variables and measurements

reflect the theoretical concepts being studied (Andersson et al., 2024). In this study, showed financial performance metrics such as Gross Profit Margin and pricing elasticity models are used to ensure that the constructs are based on recognized theories in business economics and pricing strategy.

Content validity ensures that the selected data variables such as parking duration, price, and transaction volume sufficiently cover the research objectives. The selection of these data points is based on both previous literature and expert evaluations from the case company.

Internal validity is achieved by minimizing confounding factors and ensuring that observed changes are due to pricing adjustments rather than external influences. For Company X, organic growth has been accounted for and removed by comparing two data periods before and after the pricing model change in 2024 and 2025.

External validity assesses whether the results can be generalized. While this study focuses on a single case company it uses extensive customer data. The results may not be directly applicable to all digital platform businesses but they provide valuable insights into pricing strategies for two-sided platforms. Although there is limited public scientific research on pricing models for parking and mobility platforms this study can serve as a general framework for solving key issues in two-sided platform pricing.

Reliability refers to the consistency of the measurement process and whether the research results can be replicated under the same conditions (Cozby, 2015, pp. 99–106). In this study data from different time periods are compared to assess whether the pricing model change significantly impacted customer segments or profitability. Historical transaction data provides a reliable basis for reliability assessments. The number of transactions analysed exceeds half million making the dataset statistically reliable. Additionally, data was collected from the same seasonal period to minimize variations caused by seasonality, such as peak seasons.

The study utilizes raw data collected from the case company's ERP system. Automated data extraction and validation methods help reduce inconsistencies and ensure consistency in the analysis.

To ensure statistical reliability methods such as regression models are used to determine whether the observed changes are statistically significant. These methods enhance the reliability of the study and ensure that findings are not based on random fluctuations.

Despite the measures taken to ensure validity and reliability some challenges must be acknowledged. Market changes and unpredictable external factors may influence results. For example, an increase in remote work may affect workplace parking demand. This study systematically applies validated quantitative methods and ensures transparency in data processing to make the conclusions as reliable and valid as possible.

4 Theory

The Theory section forms the core part of this study. It based on the literature review theoretical concepts are applied to practical scenarios from the perspective of Case Company X. This section provides a detailed analysis of Company X's business model and examines the impact of the service fee change on the company's profitability and customer segments. Additionally, it includes a Case Study that aims to answer the research questions.

- 1. How has the pricing change influenced the company's customer segments and which of these segments are most critical to the company's business strategy?*
- 2. How did the pricing change affect the company's profitability?*

To answer these research questions as accurately as possible this study applies a case study approach combined with quantitative analysis. This method was chosen because the objective is to measure the effects of the pricing model change in Case Company X. The quantitative approach enables a statistically strong analysis, providing precise data on how the pricing change impacts profitability, customer behaviour and service fee accumulation.

A case study is a method when analysing complex business processes in a real-world context (Yin, 2014). This study focuses on a single company and its actual market environment allowing an in-depth examination of how a pricing model change affects platform businesses.

A quantitative approach was selected because the main objective is to measure the impact of the pricing change on profitability and customer behaviour. This study analyses operational company data which provides more precise insights than a qualitative user experience based study. The quantitative analysis also enables statistical testing such as

a paired t-test which helps determine whether changes in service fees and customer numbers are statistically significant or random variations.

4.1 Case Company X Business Model

Company X connects two different participant groups on its platform enabling transactions between them. This makes Company X a two-sided platform. The platform's purpose is to bring together parking space owners and drivers providing them with a safe and convenient parking solution. For the business model to succeed it is crucial to keep a balanced ratio of parking space providers and drivers ensuring that supply meets demand. This creates a chicken and egg problem when expanding to a new city should the company first get parking space owners or drivers.

Company X has chosen to initially focus on attracting parking space providers. To do this the company has had to subsidize providers by offering incentives to join the platform even when the number of drivers was still low. This subsidization strategy is common in platform-based businesses, as described by Eisenmann et al. (2006). In practice this means that parking space owners can use the platform for free. Additionally, Company X acts as a payment intermediary transferring parking fees in full to the space owners while covering the transaction costs associated with customer payments.

Consumers have three main reasons to use the platform. First the platform offers a wide and diverse selection of parking spaces. Second Company X operates in various private parking areas and parking halls. In parking halls the company utilizes Automatic Number Plate Recognition (ANPR) technology which allows parking to start and end automatically making the process easier for customers. Third, pricing is an important factor. Company X offers competitive or lower prices compared to other providers making the platform a cost-effective choice for drivers. Figure 3 shows Company X's business model.

Company X generates revenue by charging a service fee to customers while parking space owners do not pay any service fees. In contrast many other platform-based

businesses such as food delivery and accommodation services typically charge both service providers and users.

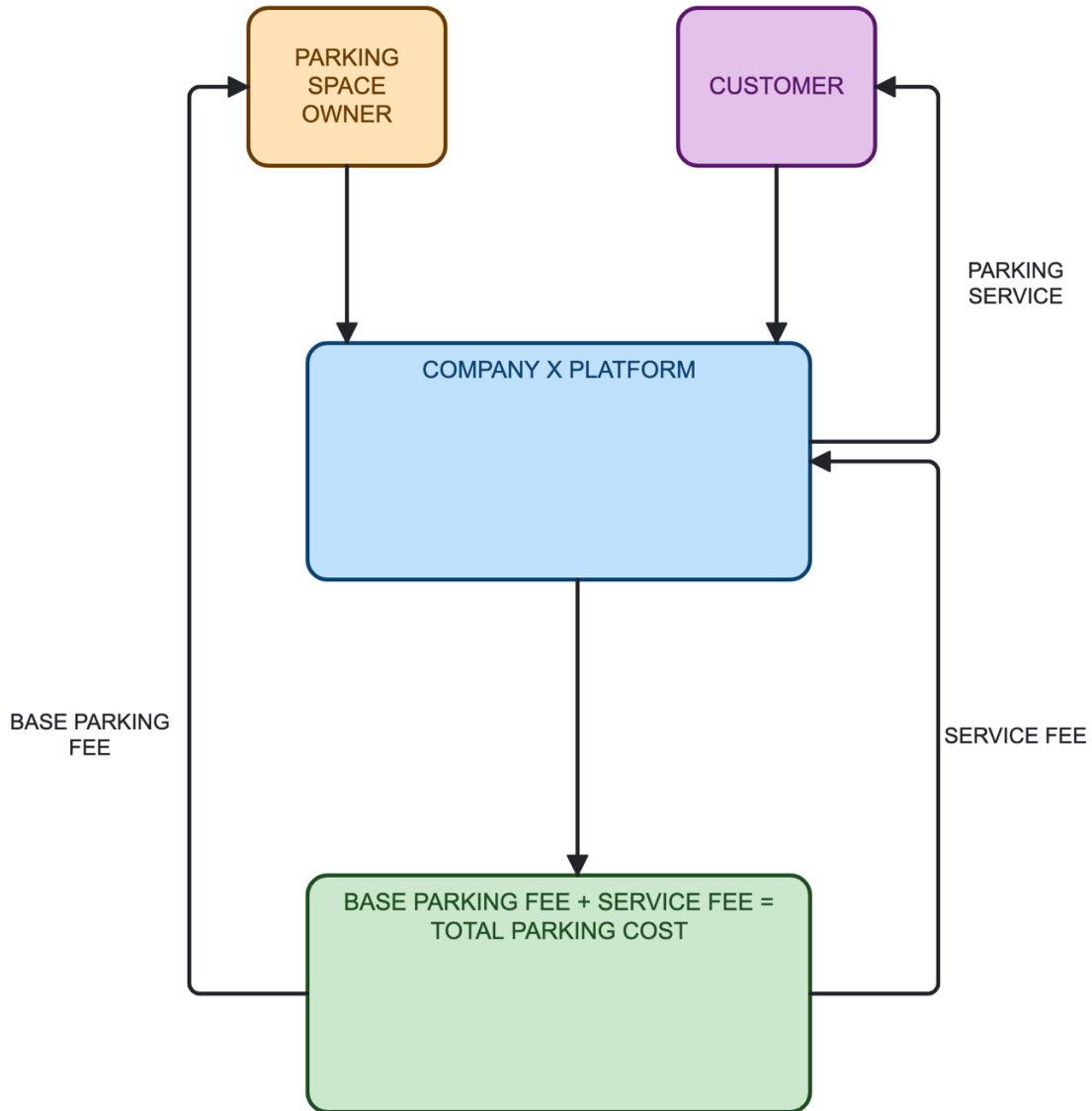


Figure 3. Company X Business model.

4.1.1 Old vs New Revenue Model

As seen in Figure 4 the old revenue model was fixed priced meaning that the total parking fee did not affect the service fee. The old pricing model included a service fee cap limiting the maximum service fee to €3.90 per month. The cost of using Company X's platform depends on the total parking fee meaning these costs are variable rather

than fixed as described by Briciu (2008). This misalignment between fixed revenue and variable costs is one of the key reasons why Company X decided to revise its service fee pricing model.

In the new service fee model the service fee is now calculated as a percentage of the total parking fee as shown in Figure 4. Since platform costs are variable revenue must also be adjusted to reflect these changes. In the new revenue model the service fee is set at 15% of the total parking price with a minimum charge of €0.39 per transaction. The service fee cap has been removed allowing Company X to collect a service fee from every paid parking transaction between parking space providers and drivers.

Sudden price increases or changes in pricing models can lead to customers discontinuing service usage or switching to a competitor's platform as noted by Bolton et al. (2003) in their research. Therefore, while the new pricing model improves revenue alignment with operational costs, careful implementation and customer communication are necessary to prevent negative user reactions.

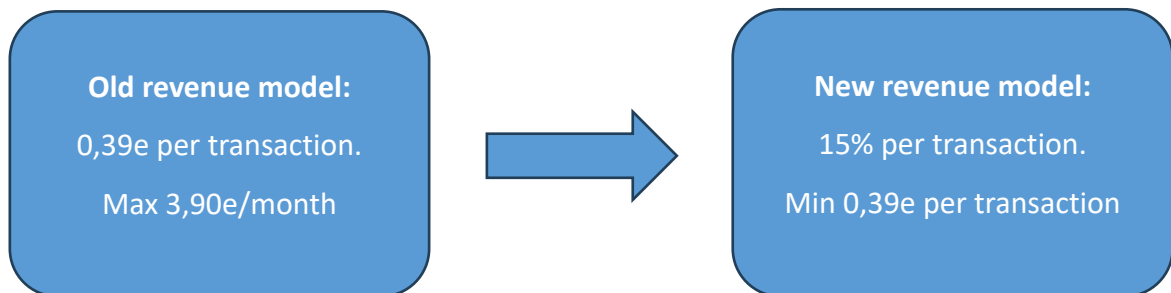


Figure 4. Old vs new revenue model.

Figure 5 shows how the service fee accumulates compared to the total parking price under both the old and new pricing models. In the old model the service fee was a fixed €0.39 while in the new model the service fee is based on 15% of the total parking price with a minimum charge of €0.39.

At lower parking prices both models are identical since the minimum service fee is still €0.39 in the new model as well. Figure 5 highlights the critical point where the new pricing model starts generating more service fee revenue than the old model. According to Popa (2008) a critical point in pricing refers to the threshold where revenue surpasses costs.

For Company X's old pricing models the critical point is €2.60. This means that for users whose total parking costs are still below €2.60 the service fee remains the same regardless of the model. However, for parking costs exceeding €2.60 the new model starts accumulating a higher service fee increasing revenue potential for the platform.

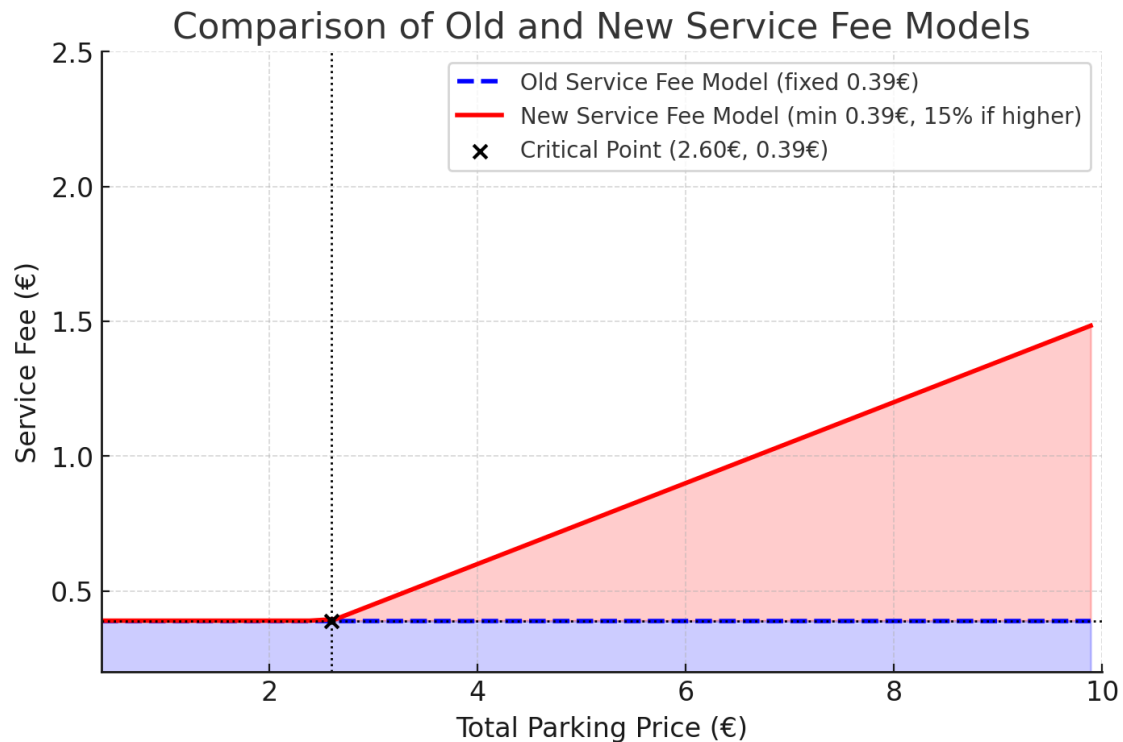


Figure 5. Comparison of old and new service fee models.

4.1.2 Costs

Comp The primary cost factors for Company X are payment processing fees and platform maintenance costs. In this study profitability is assessed at the Gross Profit Margin (GPM) level which considers the costs related to service usage and platform

maintenance categorized as Cost of Goods Sold (COGS). Other expenses such as employee salaries, investments and fixed costs (FC) influence overall business profitability but are not analysed in this study.

The most significant expense is transaction costs which arise from payment processing. Since Company X acts as a payment intermediary, it covers the transaction fees when parking payments are transferred to parking space owners. These costs vary depending on the customer's payment method as Company X supports major credit cards and online payment options.

Another cost factor is platform maintenance, but compared to transaction costs it is relatively minor. Platform upkeep is essential to ensure that the system remains operational, secure and scalable.

The new pricing model aligns better with Company X's cost structure, ensuring long-term profitability. The shift to a percentage-based service fee allows for better cost management and helps maintain business sustainability. Table 2 presents a comparison of three common payment cards, illustrating how transaction costs impact revenue and providing insight into the effect of different payment processing fees.

Table 2. Typical transaction fee per Card type (Visa, 2025).

Card type	Fee per transaction	Critical point
Visa Consumer Debit	0,2 %	-
Visa Business Debit	0,75 %	45,45 €
Visa Business Credit	1,3 %	26,26 €

Figure 6 compares the total costs of three different payment methods each with a fixed service fee and a percentage-based transaction fee (0.20%, 0.75%, and 1.30%) as shown in Table 2. The key €0.39 threshold is first exceeded with the 1.30% payment method when the parking cost reaches €26.26 followed by the 0.75% payment method at €45.45. In contrast the 0.20% payment method does not exceed the €0.39 limit within the analysed 0–50 € range.

A light blue shading highlights the areas where the total cost is still below €0.39 making it easier to compare different payment methods. The higher the percentage-based transaction fee the faster the total cost increases making low-cost payment methods more favourable. From Company X's perspective the 0.20% payment method is the most cost-effective option while the 1.30% payment method is the least favourable due to its higher expense.

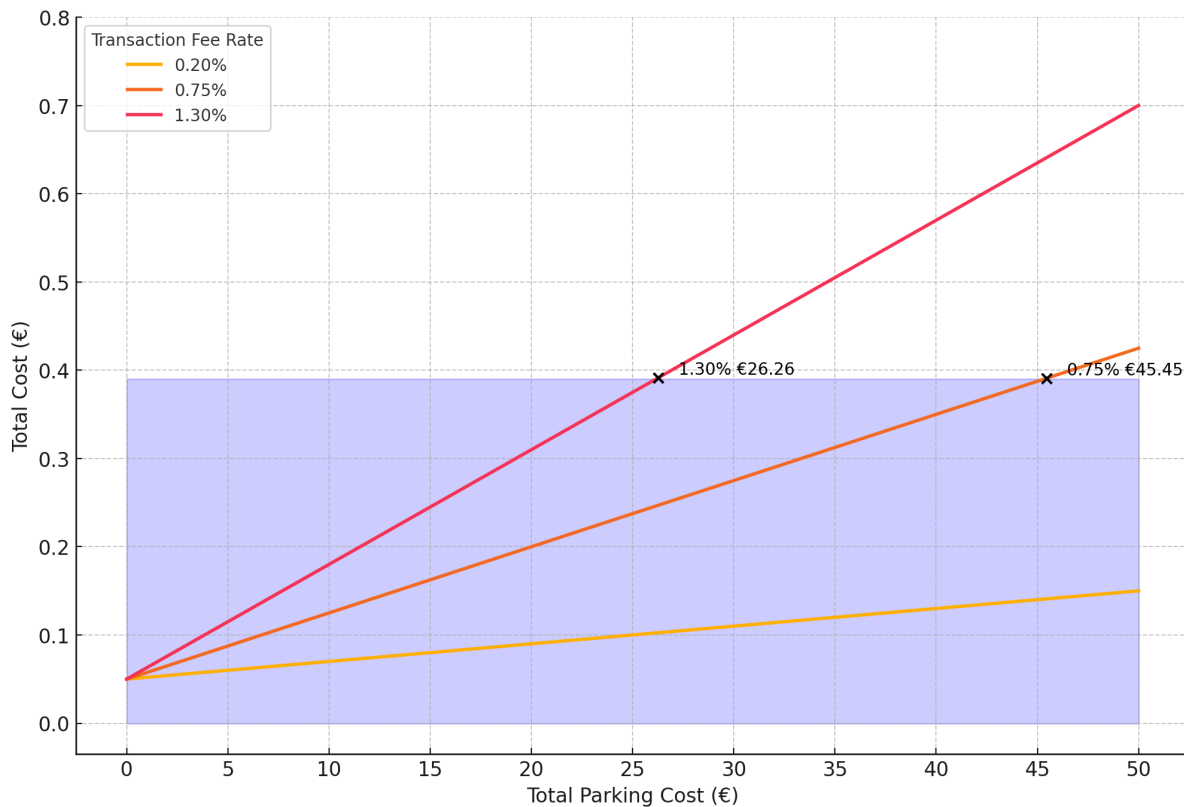


Figure 6. GOGS vs old pricing model in Company X.

4.1.3 Service Fee Cap

In the old pricing model the total service fee accumulation was capped at €3.90 per month. This meant that customers paid €0.39 per parking transaction but once they exceeded ten transactions per month no additional service fees were charged. This limited the company's ability to increase service fee revenue especially from high-frequency users. In the new pricing model the service fee cap has been removed and

the fee is now calculated as a percentage of the total parking price. As a result frequent users pay higher service fees which helps improve the company's revenue stream.

Although the service fee cap was not a direct cost it restricted revenue growth and negatively impacted business profitability as observed in figure 7. Company X still had to cover transaction costs even when customers were not paying service fees. For instance if a customer made twenty paid transactions per month, Company X incurred transaction costs for all twenty payments yet the total service fee revenue remained capped at €3.90. This meant that service fee revenues were sometimes insufficient to cover transaction related costs which weakened the platform's profitability.

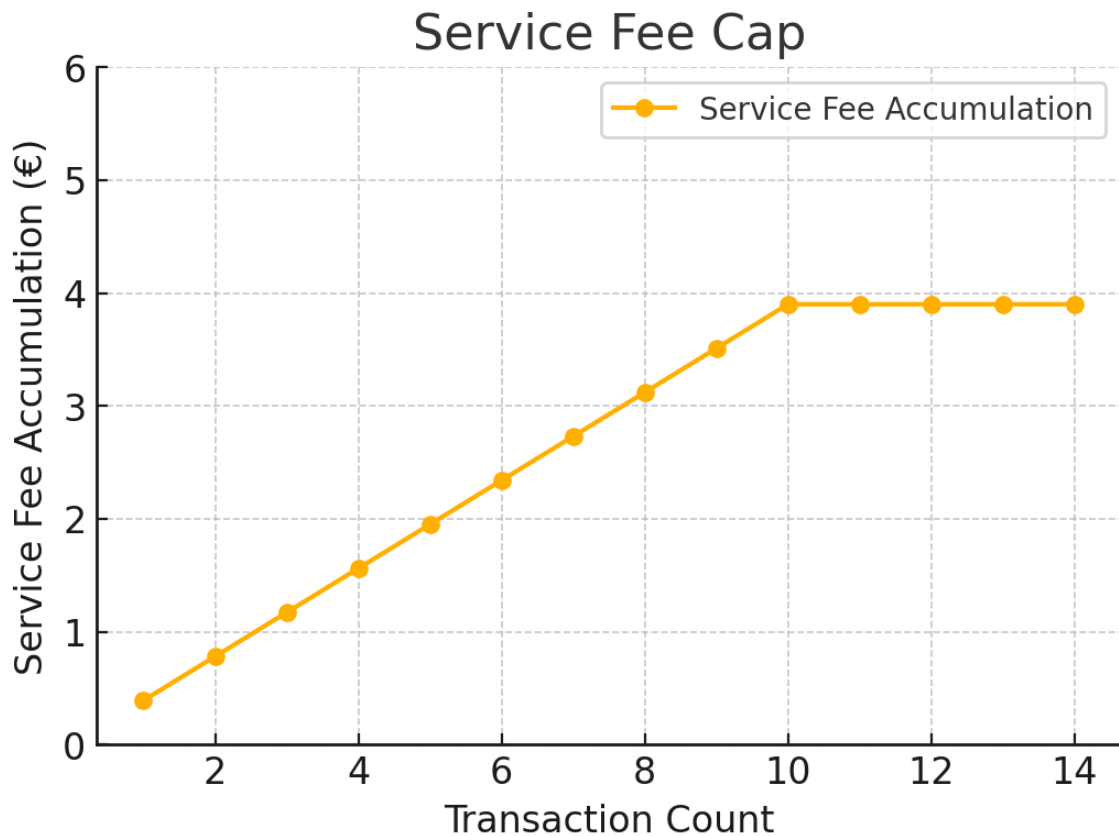


Figure 7. Service Fee Cap.

By removing the service fee cap Company X can now generate more revenue particularly from frequent users who previously reached the monthly limit quickly. This change may

also lead to some high usage customers leaving the platform due to increased costs. Active users are now valuable not only to parking space providers but also to Company X itself. The service fee cap could also be seen as a form of subsidy for frequent users which is a common strategy for platform businesses, as described by Eisenmann et al. (2006).

4.2 Case Study

The case study is a key part of this study because it aims to answer the research questions about how the pricing model change affected Company X's profitability and customer behaviour in a real business environment. This section connects the theoretical framework to practice and uses empirical data to examine how well the chosen research methods apply in a real business setting. The first step is to retrieve Dataset 1 and Dataset 2 from the company's ERP system. The company has experienced organic growth as illustrated in Figure 8. By comparing Dataset 1 and Dataset 2 the percentage of organic growth can be determined. The organic growth percentage is calculated using Formula (5).

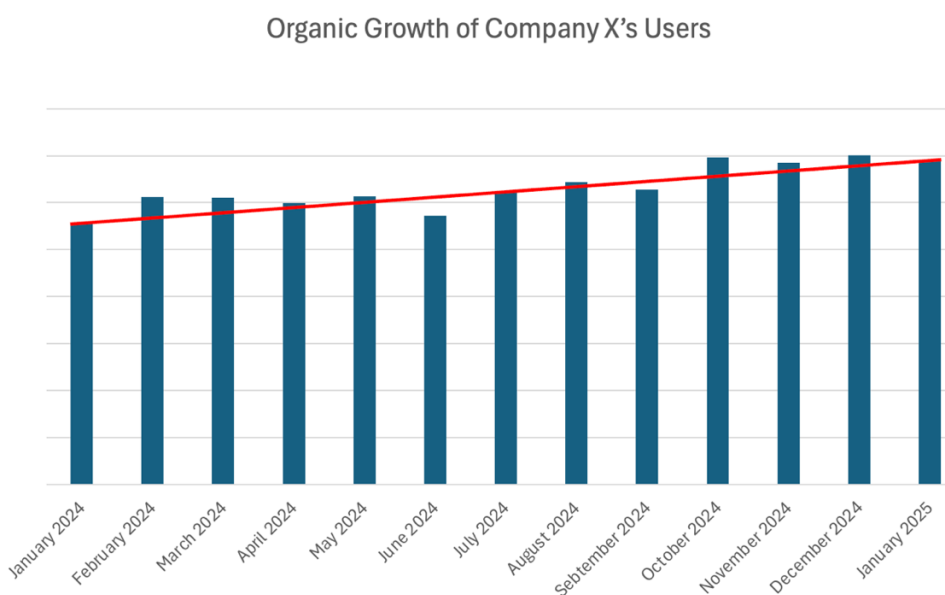


Figure 8. Organic growth of Company X's users.

The organic growth percentage is calculated as 18.9%. Using this percentage dataset 4 is adjusted to ensure comparability. Datasets 1 and 2 were collected before the pricing model change, so the change does not affect organic growth. It is important to remove the effect of organic growth so that the impact of the pricing change can be compared and evaluated more accurately. Next datasets 3 and 4 are divided into 10 categories based on customer activity levels. The goal is to segment customers according to their parking activity. Table 2 presents these categories along with their respective monthly parking frequencies.

Table 3. Customer Segmentation per parking frequency.

Category	Parking Frequency
1	$x \leq 2$
2	$3 \leq x \leq 4$
3	$5 \leq x \leq 6$
4	$7 \leq x \leq 8$
5	$9 \leq x \leq 10$
6	$11 \leq x \leq 12$
7	$13 \leq x \leq 14$
8	$15 \leq x \leq 16$
9	$17 \leq x \leq 18$
10	$x \geq 19$

After retrieving the necessary data in Tableau for analysis, datasets 3 and 4 are categorised using the calculated field feature by applying code 1 in Tableau software. Following this step the data is exported in Excel format for further analysis. Datasets 3 and 4 can be categorised using the structure as shown in code 1.

Once the number of users per category has been figured out the next step is to calculate the service fee accumulation per category. For Dataset 3 this calculation is straightforward since the service fee remains constant. For Dataset 4 the service fee data has been taken directly from the ERP system for each transaction. Using the classification rule from Code 1 the total service fees for each category have been calculated directly.

```

SELECT
    customer,
    parking_frequency,
    CASE
        WHEN parking_frequency <= 2 THEN 1
        WHEN parking_frequency BETWEEN 3 AND 4 THEN 2
        WHEN parking_frequency BETWEEN 5 AND 6 THEN 3
        WHEN parking_frequency BETWEEN 7 AND 8 THEN 4
        WHEN parking_frequency BETWEEN 9 AND 10 THEN 5
        WHEN parking_frequency BETWEEN 11 AND 12 THEN 6
        WHEN parking_frequency BETWEEN 13 AND 14 THEN 7
        WHEN parking_frequency BETWEEN 15 AND 16 THEN 8
        WHEN parking_frequency BETWEEN 17 AND 18 THEN 9
        ELSE 10
    END AS category
FROM parking data;

```

Code 1. Calculated field code for customer categorization.

To achieve more precise research results Tableau's Calculated Field feature has been utilised to extract various insights from the data. In Company X's Tableau system it is possible to directly retrieve both the service fees paid by a specific customer and the number of parking transactions.

Using the categorisation rules presented in Table 2 it is now possible to compare the number of parkers per category and the total net sales generated per category. The same categorisation and analysis process is then applied to Dataset 4 which contains data from the period after the service fee pricing adjustment. For both Dataset 3 and Dataset 4 total net sales per category is calculated using Formula (3). Next total COGS per category is determined using Formula (5).

In Company X the COGS for the services depends on the payment method used by the customer as shown in formula (5). The Company X is not able to track the payment method of each individual transaction on a detailed level. The type of payment card used has a significant impact on the variable transaction costs as seen in Figure 6.

To estimate these variable transaction costs related to payments financial data from Company X's accounting system has been used. Based on this data the average percentage of card payment commission fees has been calculated. This average value is then used to calculate COGS according to formula (5). Because of this the GPM for some categories may be slightly inaccurate. However, the overall average GPM is still correct. Since COGS has a direct impact on GPM as shown in formula (2) the GPM for each category has been calculated based on that formula.

Table 4. Calculation results.

Category	GPM ds 3	GPM ds 4	Average parking price € in ds 4	GPM % Change	Num of Cust change %	Total Service fee change%	d_i
1	73,7 %	86,5 %	6,1 €	12,8 %	-5,7 %	27,9 %	33,5 %
2	75,8 %	85,9 %	4,9 €	10,1 %	-5,0 %	44,9 %	39,9 %
3	76,3 %	85,7 %	4,7 €	9,4 %	-6,7 %	26,3 %	35,2 %
4	76,5 %	85,3 %	4,6 €	8,8 %	-8,9 %	42,7 %	33,8 %
5	76,3 %	85,7 %	4,5 €	9,4 %	-8,3 %	42,7 %	34,4 %
6	76,3 %	85,7 %	4,5 €	9,3 %	-9,9 %	39,1 %	31,8 %
7	75,8 %	85,8 %	4,5 €	10,0 %	-8,9 %	72,2 %	44,6 %
8	75,46 %	85,3 %	4,4 €	9,8 %	-11,9 %	67,6 %	41,9 %
9	75,17 %	85,2 %	4,4 €	10,0 %	-13,5 %	68,4 %	42,7 %
10	69,8 %	85,8 %	4,4 €	16,0 %	-10,2 %	145,1 %	155,3 %
\bar{x}	75,1 %	85,6 %	4,7 €	10,6 %	-8,9 %	57,7 %	49,3 %

The total net sales and number of customers were taken from Company X's Tableau software. Using this data the values were grouped into categories based on the rule shown in Table 3. The percentage change in the number of customers and the service fee total was calculated using formula (8) as explained.

Once the percentage changes for each category were calculated we could move on to perform the paired t-test using formula (9). To do this, we first need to calculate the average difference \bar{d} between the percentage changes. We also need to calculate the standard deviation of those difference s_d between the percentage changes. We also need to calculate the standard deviation of those differences using formula (10):

$$\bar{d} = \frac{\sum_{i=1}^n d_i}{n}, \quad (10)$$

where d_i is the difference between the total service fee change % and the number of customer change % for each individual category. n represents the total number of categories. The average difference \bar{d} is 56,95 %. Next, we calculate the variance:

$$\sum (d_i - \bar{d})^2, \quad (11)$$

where d_i is the difference between the total service fee change (%) and the number of customer change (%) for each category. \bar{d} is the average of these percentage differences across all categories. The calculated variance is 26724,5. This shows how much more or less the service fee has increased compared to the growth in customer numbers (Gustafsson, 2025). Next, we calculate the standard deviation s_d . With the help of standard deviation, we can understand how much the differences for each category vary around the average.

$$s_d = \sqrt{\frac{\sum_{i=1}^n (d_i - \bar{d})^2}{n-1}} \quad (12)$$

The standard deviation s_d is 54,48. A high standard deviation means that there is a lot of variation in the differences between the categories. Standard deviation shows how far the individual values are from the average according to Gustafsson (2025). Now we can move on to insert the values into formula (9).

The result of the paired t-test is $t = 3,31$. The paired t-test is used to find out whether the observed changes are statistically significant. The test is done using a 5% significance level, which means that if the p-value is smaller than 0.05, the change is considered statistically significant. If $p < 0.05$, the difference is statistically significant. This means we can conclude that the percentage change in service fees and customer numbers is not due to random chance.

If $p > 0.05$ the difference is not statistically significant and the observed change could simply be caused by random variation. The p-value p is calculated by comparing the t-value we got to the t-distribution using the degrees of freedom. The number of degrees of freedom d_f depends on the number of categories. In this case we have $n = 10$ categories so the degrees of freedom d_f is 9. The p-value is calculated using the cumulative distribution function of the t-distribution as follows:

$$p = 2 * P(T > |t|), \quad (12)$$

where $P(T > |t|)$ represents the probability of getting a t-value equal to or greater than the observed value in the right tail of the t-distribution, assuming the null hypothesis is true. In this case, the p-value is calculated from the t-distribution with degrees of freedom d_f is 9 and $t = 3,31$.

$$P(T > 3,31) = 0,0043$$

Since this is a two-tailed test we multiply the one-tailed p-value by two. Based on this the final p-value is 0.0086. The interpretation of the p-value is based on the predefined 5% significance level. If $p < 0.05$, the difference is statistically significant and we can reject the null hypothesis. This means that the changes in service fees and customer numbers are not due to random chance. If $p > 0.05$, the difference is not statistically significant and the changes in service fees and customer numbers might be caused by random variation.

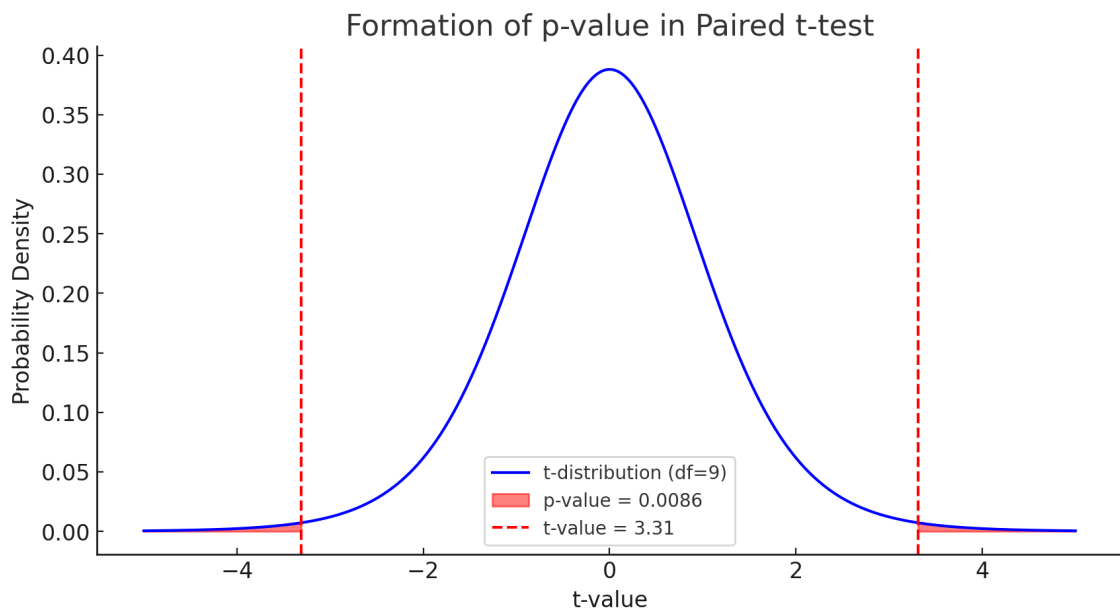


Figure 9. Formation of p-value in paired t-test.

Figure 9 shows how the p-value is formed in the paired t-test. Since the p-value we obtained is 0.0086 which is clearly below 0.05 we can reject the null hypothesis. The blue curve represents the t-distribution with 9 degrees of freedom $d_f = 9$. The red dashed lines show the observed t-values at $t = 3.31$ and $t = -3.31$. The red shaded areas represent the p-value of $p = 0.0086$ which reflects the total probability in the extreme ends of the t-distribution.

This means that the percentage growth in service fees is statistically significantly higher than the change in customer numbers. From this we can find that Company X's service fee revenue has grown significantly without major customer losses. According to Table 4 there was some customer loss in every category but despite that the total service fee in each category increased. Also, the profitability in every category improved. Therefore, the pricing change can be considered successful from Company X's perspective.

Pareto analysis is based on the 80/20 rule which suggests that 80% of results come from 20% of the causes. In business, this principle is often used to identify the key factors that have the biggest impact on performance. In this study Pareto analysis is used to help answer the research question: which are Company X's most important customer

segments, and which service categories generate the majority of service fee revenue. In the previous pricing model a service fee cap was in place which limited total revenue. After the pricing change the service fee cap was removed making it possible for the 80/20 rule to apply more clearly.

Pareto analysis was performed to evaluate how service fee revenue is distributed after the pricing change in order to identify which categories generate the largest share of income. In Company X's case the Pareto principle could mean that 20% of the categories make 80% of the service fee revenue.

For the analysis, the categorization rule presented in Table 3 is used. In Table 5, the service fee amounts are arranged based on their cumulative share. The purpose of the cumulative share is to show how much each category contributes to the total service fee revenue. The table also includes a cumulative per 100% column, which indicates the percentage of total service fees accumulated as the categories are added one by one from the largest to the smallest. Exact euro amounts of the service fee revenue are not shown in this thesis because due to business confidentiality.

Table 5. Cumulative service fee per category after service fee changes.

Category	Cumulative	Cumulative per 100 %
1	23.3 %	23,3 %
2	17,7 %	41,0 %
3	13,3 %	54,3 %
10	13,1 %	67,4 %
4	10,0 %	77,3 %
5	7,5 %	84,8 %
6	5,4 %	90,2 %
7	4,2 %	94,4 %
8	3,1 %	97,5 %
9	2,5 %	100 %

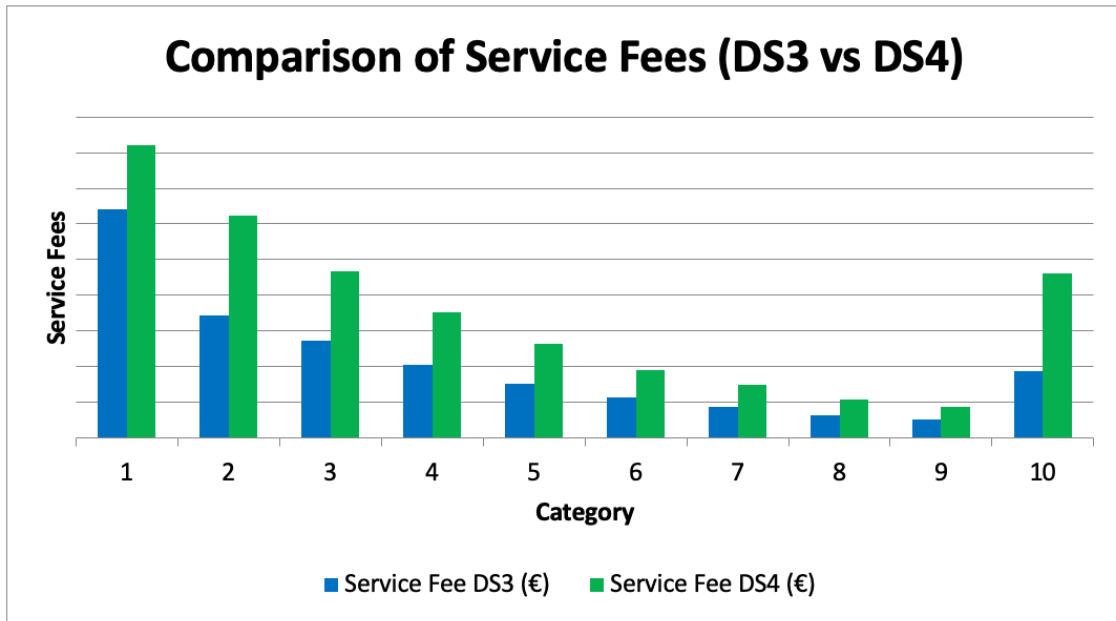


Figure 10. Comparison of Service Fees (DS3 vs DS4).

The results show that around 80% of the total service fee revenue comes from 5–6 categories rather than just one or two as the 80/20 rule would suggest. The revenue is more evenly distributed across multiple categories showing that the business model is not focused on only a few main sources of income.

No single category dominates the service fee accumulation but instead the income is spread more evenly between different categories. One of the research questions aimed to identify Company X's most important customer segments.

The service fee change had a notable impact on Category 10 as shown in Figure 10. After removing the effect of organic growth, the euro-based service fee revenue in this category increased by 145.1%. According to the analysis the most important customer segments can be considered categories 1, 2, 3 and 10.

4.3 Study Contributions

This study expands existing knowledge on platform economics and pricing models by examining how service fee adjustments influence customer behaviour and profitability in two-sided markets. The research builds upon previous theories on platform monetization, customer segmentation and cost structures, applying them to the parking industry through a case study approach. By using empirical data and statistical analysis this study provides new insights into how pricing model changes affect user retention, revenue distribution and cost structure management in platform-based businesses.

The contributions of this study are divided into two key areas. The theoretical contribution explains what new insights the study provides at a theoretical level and why they are significant in the context of digital platform theories. This section discusses how the study builds upon existing literature and enhances understanding of pricing models in platform businesses. The practical contribution focuses on the tangible benefits for Company X and similar businesses offering valuable insights into how pricing changes influence user responses and platform profitability. These aspects are further explored in the subheadings Theoretical Contribution and Practical Contribution.

4.3.1 Theoretical Contribution

This study expands the theory of platform economy and pricing models by examining how changes in service fees affect customer behaviour and profitability in two-sided platforms. It contributes to the existing literature on platform-based companies especially in the context of the parking industry.

Company X operates as a two-sided platform connecting parking space providers with drivers enabling transactions between them. The success of this business model depends on maintaining a balanced relationship between supply and demand meaning that the number of available parking spaces and the number of active users must be in

the right proportion. This creates the well-known chicken-and-egg problem, which is a key challenge in platform economics (Eisenmann et al., 2006).

The study builds on existing theories and applies them to a case study of a two-sided platform in the parking sector. The main focus is on understanding how customers using the platform respond to changes in the pricing model. Previous literature has shown that platform revenue models often rely on subsidizing one side of the market while the other pays for the service according to Rochet and Tirole, (2003). Company X follows this principle by initially supporting parking providers before attracting drivers. The shift from a fixed pricing model to a transaction-based service fee aligns with the theoretical view that platform companies must adjust their revenue model based on operational costs and customer behaviour (Briciu, 2008).

This study expands existing theory on two-sided platforms in several ways. First, it explores how service fees can be adapted in two-sided platform models. Unlike e-commerce or ride-sharing platforms Company X operates in a regulated and location-dependent industry where parking rules, urban planning and driver behaviour all influence market balance. This study provides empirical evidence on the effects of shifting from a fixed pricing model with a revenue-limiting service fee cap to a percentage-based pricing model. It focuses especially on the impact of this change on customer churn, revenue stability and cost structure.

Second, the study adds empirical insights into pricing model changes. While previous research has explored platform revenue models few studies offer quantitative evidence on how pricing changes influence customer behaviour. This study uses statistical analysis to assess how the service fee change affects customer segments supporting theoretical models of pricing flexibility in platforms (Bolton et al., 2003).

Third, the study deepens the analysis of customer segmentation and pricing sensitivity. Most earlier pricing research in platform economics has focused on general market

reactions. This study examines how different customer groups adapt to changes in service fees. In the case of Company X, customers are segmented based on activity level specifically the number of parking transactions. The analysis provides a method for evaluating revenue shifts across segments and identifying which customer groups are most important for profitability.

Fourth, the study explores the application of the Pareto distribution in two-sided platforms. The 80/20 rule is used in business but its relevance to platform service fee accumulation has not been broadly examined. This study tests whether the majority of service fee revenue is generated by a small group of users or whether the revenue is distributed more evenly across customer segments.

Fifth, the study brings a new perspective on the role of transaction costs and payment systems in platform businesses. While earlier research has mostly focused on customer acquisition and network effects in cost structures the processing fees of payment transactions have received less attention. This study presents a model that analyses how transaction costs affect the platform's gross profit margin. The analysis of payment methods shows that different payment options have a significant impact on platform profitability an essential yet often overlooked factor in pricing model design. This provides a framework for future studies examining pricing model changes in platform-based businesses.

4.3.2 Practical Contribution

This study provides valuable insights for Company X's management about the success of the pricing model change and its impact on profitability, customer churn and future financial planning. Pricing changes are especially critical for two-sided platforms as they directly influence user behaviour, revenue generation and the company's ability to scale. The findings help the management assess whether the new pricing model was successful and how it has affected the platform's overall financial position.

From a leadership perspective it is essential to understand whether the pricing change had a positive or negative impact on profitability and more importantly, how significant that impact was. This is evaluated through the gross profit margin which considers operational costs such as transaction fees and service maintenance costs. Since platform-based companies are often unprofitable in early stages the need for more funding remains a constant challenge. A successful pricing model shift can reduce cash flow deficits giving management a clearer view of future capital needs and investment strategy.

Another key question is how the removal of the service fee cap affected customer churn. While removing the cap may increase revenue it could also cause some active users to switch to competing platforms. This study analyses whether that risk materialized and to what extent providing Company X with a data-driven foundation for developing future pricing models. The research also helps management identify the most profitable customer segments based on activity level. By understanding which user groups generate the most revenue and are the most profitable the company can better improve future pricing strategies and marketing efforts. This opens the door for targeted marketing campaigns and the development of tiered or segment-specific pricing models that aim to maximize long-term profitability.

Although the primary focus of the study is on Company X its findings can also help other companies operating under two-sided platform business models. In the platform economy many companies face the same challenge: how to balance user growth and profitability without losing customers. This analysis of the pricing model's effects offers broadly applicable insights for mobility services, marketplaces and other transaction-based platforms. In addition, the study provides useful information for companies considering a change pricing model from a fixed pricing model to a percent based. The results show how this change can be implemented in a controlled way and highlight the key metrics that should be monitored to avoid significant customer loss. This is

particularly valuable For companies looking to improve their revenue models and ensure that the platform's cost structure aligns with long-term business goals.

Overall, this study offers Company X's leadership and other platform-based companies concrete practical insights into the financial and strategic impacts of pricing model changes. By understanding changes in gross profit margin, customer churn trends and the most valuable customer segments companies can make better decisions about pricing optimization, customer strategies and long-term growth planning.

5 Conclusion

The goal of this thesis was to evaluate how a change in the service fee pricing model affected customer segments and profitability at Case Company X. Company X operates as a digital two-sided platform in the parking industry where transaction-based costs and large customer volumes are key elements of the business model. A quantitative approach was used with analysis methods including a paired t-test and Pareto analysis. These tools made it possible to understand the effects of the pricing change using real data.

On the first research question - how the pricing change affected customer segments and which of them are strategically important - the results show in Table 4 that the overall structure of customer activity levels remained similar after the change but the number of users decreased across all segments. The smallest drop was seen in users who used the platform rarely and the biggest drop was among those who used it often. The number of users was compared between the same period in 2024 and 2025 taking into account an estimated organic growth of 18.9%. Because of this growth the total number of users in 2025 did not go below the 2024 level.

The category-level analysis also showed that the business is not mainly driven by just one or two categories. Instead, the revenue comes from many different categories. The results show that about 80% of the total service fee revenue comes from 5–6 categories, not just 1 or 2 as the 80/20 Pareto rule would suggest. This means the income is more evenly spread out and the company is not too dependent on a small group of users.

The analysis also showed that in Category 10, the most active users service fee revenue increased a lot by 145.1%. At the same time the average price per parking got lower as usage increased. This suggests that the growth in revenue in Category 10 was caused by the removal of the service fee cap.

Based on how often users used the platform the most important customer segments were found in Categories 1, 2, 3 and 10. These are users who used the platform 1–6

times and more than 19 times during the two-month period. These groups are important for future pricing and marketing planning. For Company X's management it is also important to understand how customer numbers could be increased in the middle categories (4–9).

The service fee revenue grew in all segments after the pricing model change. This growth shows that the percentage-based model is more profitable than the old fixed model which also had a cap based on volume. Therefore, it can be concluded that the pricing model change was strategically successful and supports Company X's financial sustainability moving forward.

Looking at the second research question — how the pricing change affected overall profitability — the shift from a fixed monthly pricing model to a percentage-based one led to a significant increase in gross profit margin across all customer segments. On average GPM per category increased by 10.6%. In total, the overall service fee revenue grew by 57,7 % after the pricing change.

This increase was especially clear among highly active users as the removal of the service fee cap meant that service fees were now collected from every transaction. While customer numbers declined in every category the increased revenue per user compensated for the loss in overall profitability.

The statistical significance of these findings was confirmed using a paired t-test which showed that the difference between service fee growth and customer number change was statistically significant ($p < 0.05$) meaning the change was not due to random variation. These results show that the new pricing model has improved the alignment between cost structure and revenue generation supporting the company's long-term profitability goals.

This study provides practical and valuable insights for both academic discussion and real-world business decision-making. The key contribution lies in analysing customer segmentation and profitability simultaneously through quantitative methods, an

approach rarely applied to modern digital two-sided platforms especially in the context of the parking industry. Additionally, the use of Pareto analysis in this platform environment offers a new perspective on how customer-focused strategies can be developed in transaction-based service businesses.

From a business perspective this study helps clarify which customer segments generate the most value and how pricing should be designed to support both customer satisfaction and long-term platform growth. Case Company X has succeeded in reducing its reliance on subsidizing service providers increasing unit-level margins and retaining its most critical user groups. As a result, the company is now in a stronger position to give resources strategically toward the right customer segments and to continue developing its platform profitably in the future.

These findings will be presented to Company X's management as part of this thesis to support evidence-based decision-making and to help prioritize development actions that improve both customer experience and long-term financial performance.

5.1 Limitations

This study includes several limitations that should be considered when interpreting the results. First, the research focuses on customer data from Case Company X. Because the study focuses on one company the results may not directly apply to other industries or platforms with different customer behaviour or cost structures.

Second, the data sets used in the study Dataset 3 and Dataset 4 limited to a two-month period before and after the pricing model change in the years 2024 and 2025. This short observation window does not allow for a thorough analysis of long-term impacts such as customer loyalty, market trends or seasonal variations.

The calculation of organic growth was based on a comparison between Dataset 1 and Dataset 2 both collected before the pricing change. External factors such as marketing campaigns, new partnerships or changes in the competitive landscape may have influenced the results. These effects could not be fully separated from the estimate of organic growth which may slightly distort the true growth rate.

The data used in the analysis was retrieved from the company's ERP system and consists of transaction records. While the dataset is broad and comprehensive it may contain occasional errors and its reliability depends on the accuracy of internal data management processes. In addition, the study only includes paying customers meaning that the behaviour of users who left the platform or became inactive is not captured. Subscription-based users with fixed monthly fees were also excluded, as the pricing model change did not affect them.

Quantitative methods such as the paired t-test and Pareto analysis were used in the study to provide statistically valid results. However, quantitative approaches do not capture qualitative aspects such as customer satisfaction perceived fairness of pricing or brand loyalty.

5.2 Future Work

This study opens ideas for future research. First, it would be useful to track the long-term effects of the pricing model change over a longer period for example 12-24 months. This would help find any delayed reactions from customers or changes in customer loyalty. A longer study could also show whether the pricing change has a lasting effect on how people use the platform or if the impact was only short-term. It could also give a better picture of how the change has affected Company X's organic growth over time.

Second, future research could combine numbers-based quantitative analysis with more people-focused qualitative methods like customer surveys or interviews. This would help

us understand how customers feel about the pricing change and what they see as fair or transparent. It would also give a broader view of how service fees affect customer behaviour on platform-based services. Although this study focused on a two-sided platform in the parking industry similar research in other sectors like home delivery or rental platforms could be helpful. It would allow for a comparison of how pricing changes affect customer behaviour in different industries.

Lastly, future studies could explore more deeply how pricing model changes affect the company's cost structure and cash flow across different customer groups. This could help companies better understand their customer segments and improve their pricing strategies giving business leaders practical support when planning future changes.

References

- Airaksinen, O. (2022). *Maksaminen on Suomessa edullista – luottokortti kaikkein kallein vaihtoehto.* (2022). Taloustaito
<https://www.taloustaito.fi/Rahat/maksaminen-on-suomessa-edullista--luottokortti-kaikkein-kallein-vaihtoehto/#8e4eaa5d>
- Albers, M. J. (2017). Quantitative Data Analysis—In the Graduate Curriculum. *Journal of Technical Writing and Communication*, 47(2), 215–233. sagepub.
<https://doi.org/10.1177/0047281617692067>
- Alkiayat, M. (2021). A practical guide to creating a pareto chart as a quality improvement tool. *Global Journal on Quality and Safety in Healthcare*, 4(2), 83–84. <https://doi.org/10.36401/jqsh-21-x1>
- Andersson, M., Boateng, K., & Abos, P. (2024, September 27). *Validity and Reliability: the Extent to Which Your Research Findings Are Accurate and Consistent.* ResearchGate.
https://www.researchgate.net/publication/384402476_Validity_and_Reliability_The_extent_to_which_your_research_findings_are_accurate_and_consistent
- Alexandru, C. (2019). *The Role of Profitability Rates And Profit Margins In Assessing The Company’S Financial Performance.* Annals - Economy Series.
https://www.semanticscholar.org/paper/The-Role-Of-Profitability-Rates-And-ProfitMarginsAlexandru/e85ee9e29ab770f69525064045f6d9ed06af8876?utm_source=consensus
- Ali, B. J., & Anwar, G. (2021). *Marketing Strategy: Pricing Strategies and Its Influence on Consumer Purchasing Decision.* Papers.ssrn.com.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3837579

Aloui, C., & Jebzi, K. (2022). Does corporate social responsibility solve the chicken-and-egg problem for a two-sided platform? *Managerial and Decision Economics*.

<https://doi.org/10.1002/mde.3593>

Amaldoss, W., Du, J., & Shin, W. (2023). Pricing Strategy of Competing Media

Platforms. *Marketing Science*. <https://doi.org/10.1287/mksc.2021.0092>

Asfar, A. H., & Puji Suropto. (2021). The Effect of Services and Prices on Customer Satisfaction. *BINA BANGSA INTERNATIONAL JOURNAL of BUSINESS and*

MANAGEMENT, 1(3), 202–211. <https://doi.org/10.46306/bbijbm.v1i3.27>

Bimpikis, K., Papanastasiou, Y., & Zhang, W. (2024). Information Provision in Two-Sided Platforms: Optimizing for Supply. *Management Science*.

<https://doi.org/10.1287/mnsc.2023.4894>

Bolton, L. E., Warlop, L., & Alba, J. W. (2003). Consumer Perceptions of Price (Un)Fairness. *Journal of Consumer Research*, 29(4), 474–491.

<https://doi.org/10.1086/346244>

Borshell, N., & Dawkes, A. (2009). Pharmaceutical royalties in licensing deals: No place for the 25 per cent rule of thumb. *Journal of Commercial Biotechnology*, 16(1),

8–16. <https://doi.org/10.1057/jcb.2009.13>

Chang, T., & Guo, Y. (2021, December 15). *Research on Pricing Strategies of Chinese E-Business Platforms Based on Game Theory*. www.atlantis-press.com; Atlantis

Press. <https://doi.org/10.2991/assehr.k.211209.412>

- Căruntu, G., & Alexandru. (2019). *THE ROLE OF PROFITABILITY RATES AND PROFIT MARGINS IN ASSESSING THE COMPANY'S FINANCIAL PERFORMANCE*.
https://www.utgjiu.ro/revista/ec/pdf/2019-01/18_CaruntuG.pdf
- Cozby, P., & Bates, S. (2015). *Behavioral Research TWELFTH EDITION Methods in*.
https://students.aiu.edu/submissions/profiles/resources/onlineBook/Y8M8y6_Methods%20in%20Behavioral%20Research.pdf
- Cusumano, M. A., Yoffie, D. B., & Gawer, A. (2020). *The Future of Platforms. MIT Sloan Management Review*.
https://www.researchgate.net/publication/350186892_The_Future_of_Platforms
- Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). *The business of platforms: strategy in the age of digital competition, innovation, and power*. Harpercollins Publishers.
- de Luna, I. R., Liébana-Cabanillas, F., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2019). Mobile payment is not all the same: The adoption of mobile payment systems depending on the technology applied. *Technological Forecasting and Social Change*, 146, 931–944. <https://doi.org/10.1016/j.techfore.2018.09.018>
- Dewi, P. E. D. M., Devi, S., & Masdiantini, P. R. (2021, November 25). *Analysis of Cost of Sold and Production Costs on Company Profit*. www.atlantis-Press.com; Atlantis Press. <https://doi.org/10.2991/aebmr.k.211124.056>
- Dou, G., Lin, X., Cn, Chi, R., & Zheng, Z. (2020). *PRICING STRATEGY OF A TWO-SIDED PLATFORM UNDER CONSUMER CATEGORIZATION*. Retrieved February 9, 2025, from http://www.jecr.org/sites/default/files/2020vol21no2_Paper4.pdf

Eisape, D. A. (2022). Transforming Pipelines into Digital Platforms: An Illustrative Case Study Transforming a Traditional Pipeline Business Model in the Standardization Industry into a Digital Platform. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(4), 183.

<https://doi.org/10.3390/joitmc8040183>

Eisenmann, T., Parker, G., & M.W. Van Alstyne. (2006). Strategies for two-sided markets. *Harvard Business Review*, 84(10), 92-101+149.

https://www.researchgate.net/publication/294221616_Strategies_for_two-sided_markets

Evans, D. S. (2016, July 14). *Matchmakers: The New Economics of Multisided Platforms*. Harvard Business Review. [https://hbr.org/webinar/2016/06/matchmakers-the-](https://hbr.org/webinar/2016/06/matchmakers-the-new-economics-of-multisided-platforms)

[new-economics-of-multisided-platforms](https://hbr.org/webinar/2016/06/matchmakers-the-new-economics-of-multisided-platforms)

Evans, D., & Schmalensee, R. (2013). *NBER WORKING PAPER SERIES THE ANTITRUST ANALYSIS OF MULTI-SIDED PLATFORM BUSINESSES*.

https://www.nber.org/system/files/working_papers/w18783/w18783.pdf

Finlex, (2000). *Ajoneuvon rekisterinumero. Diaarinumero 344/45/2000*.

<https://www.finlex.fi/fi/viranomaiset/tsv/2000/20000041>

Gao, M. (2018). PLATFORM PRICING IN MIXED TWO-SIDED MARKETS. *International Economic Review*, 59(3), 1103–1129. <https://doi.org/10.1111/iere.12298>

Ghazawneh, A. (2012). *Towards a Boundary Resources Theory of Software Platforms*.

Retrieved March 1, 2025, from <https://hj.diva-portal.org/smash/get/diva2:567769/FULLTEXT01.pdf>

Gholami, S., & Trachter, N. (2023). *How Well Do Firms Retain Customers After Price Increases?* | *Richmond Fed*. www.richmondfed.org. No. 23-16.

https://www.richmondfed.org/publications/research/economic_brief/2023/eb_23-16

Grüschow, R. M., & Brettel, M. (2018). Managing Payment Transaction Costs at Multinational Online Retailers. *International Journal of Electronic Commerce*, 22(1), 125–157. <https://doi.org/10.1080/10864415.2018.1396127>

Gustafsson, C. (2025). *Tilastotieteen perusteet Luentorunko*. Retrieved March 21, 2025, from <https://lipas.uwasa.fi/~chg/Tilastotieteen%20perusteet%20luentorunko.pdf>

Hagiu, A. (2009). Two-Sided Platforms: Product Variety and Pricing Structures. *Journal of Economics & Management Strategy*, 18(4), 1011–1043. <https://doi.org/10.1111/j.1530-9134.2009.00236.x>

Hagiu, A. (2014). Strategic Decisions for Multisided Platforms. *MIT Sloan Management Review*, 55(2), 92–93. https://www.researchgate.net/publication/279322256_Strategic_Decisions_for_Multisided_Platforms

Harmawan, W. A., Situmorang, S. H., & Rini, E. S. (2023). Fairness of Price and Satisfaction on Loyalty Of Digital Streaming Services Users. *Jurnal Ekonomi Bisnis, Manajemen Dan Akuntansi*, 2(2), 01–07. <https://doi.org/10.58477/ebima.v2i2.110>

Iarmolenko, I., & Chornous, G. (2020). The Model of a Second-Hand Goods Resale Exchange under Transactional Pricing Strategy. *Ekonomika*, 99(1), 69–78. <https://doi.org/10.15388/ekon.2020.1.4>

Inyang, E. (2017). *Doing academic research*. Cambridge Scholars Publishing.

<https://www.cambridgescholars.com/resources/pdfs/978-1-5275-0322-9-sample.pdf>

Jia, J. (2016). Managing the Revenue of Sales Platforms: Insights into Service Fees. *Production and Operations Management*, 25(6), 1026–1037.

<https://doi.org/10.1111/poms.12524>

Kung, L.-C., & Zhong, G.-Y. (2017). The optimal pricing strategy for two-sided platform delivery in the sharing economy. *Transportation Research Part E: Logistics and Transportation Review*, 101, 1–12. <https://doi.org/10.1016/j.tre.2017.02.003>

Kotler, P., & Armstrong, G. (2018). *Principles of Marketing*.

<https://commecsintstitute.edu.pk/wp-content/uploads/2024/08/Kotler-and-Armstrong-Principles-of-Marketing.pdf>

Li, Z., & Qi, H. (2023). The Profitability Puzzle of Digital Labor Platforms. *Review of Radical Political Economics*, 55(4), 617–628.

<https://doi.org/10.1177/04866134231183213>

Liozu, S. M. (2021). The adoption of pricing from an organizational perspective and its impact on relative firm performance. *Journal of Revenue and Pricing Management*. <https://doi.org/10.1057/s41272-021-00303-4>

Loan, F. A., & Mushtaq, R. (2023). Pareto 80/20 Rule: A New Principle for Serial Subscription. *Serials Review*, 49(1–2), 1–5.

<https://doi.org/10.1080/00987913.2023.2179783>

Liptáková, E. (2021). T-test for two dependent samples – some practical notes. *Slovak Journal of Sport Science*, 7(1), 48–55.

<https://doi.org/10.24040/sjss.2021.7.1.48-55>

- Majumder, S., & Maheshwarappa, H. M. (2023). Interpretation of p-value: The Correct Way! *Indian Journal of Respiratory Care*, 12(1), 1–2. <https://doi.org/10.5005/jp-journals-11010-1026>
- Nariswari, T. N., & Nugraha, N. M. (2020). Profit Growth: Impact of Net Profit Margin, Gross Profit Margin and Total Assests Turnover. *International Journal of Finance & Banking Studies (2147-4486)*, 9(4), 87–96. Researchgate. <https://www.ssbfnnet.com/ojs/index.php/ijfbs/article/view/937>
- Osakwe, J., Shilongo, A., & Ziezo, M. M. (2023). Optimising Customer Segmentation in Digital Marketing Using Predictive Analytics: A Review of Literature. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.4662191>
- Parker, G., Alstyne, M. V., & Choudary, S. P. (2016). *Platform revolution: how networked markets are transforming the economy and how to make them work for you*. W. W. Norton & Company.
- Pawełoszek, I. (2021). Customer segmentation based on activity monitoring applications for the recommendation system. *Procedia Computer Science*, 192, 4751–4761. <https://doi.org/10.1016/j.procs.2021.09.253>
- Popa, D. (2008). STUDY OF WINE GROWING PRODUCTION ACTIVITY EFFICIENCY BY THE ANALYSIS OF THE CRITICAL POINT. *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca Horticulture*, 65(2), 289–293. <https://doi.org/10.15835/buasvmcn-hort:970>
- Shier, R. (2004). *Statistics: 1.1 Paired t-tests*. <https://www.statstutor.ac.uk/resources/uploaded/paired-t-test.pdf>

Shrestha, J. (2023). P-Value: A True Test of Significance in Agricultural Research. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.4592804>

Suhendra, I. & Istikomah, N. Anwar, C. J., Apip Supriadi, Wakhid, A. A., Eka Purwanda, & Salim, A. (2025). Influence of the digital economy on economic growth: empirical study of a region in Indonesia. *Cogent Economics & Finance*, 13(1). <https://doi.org/10.1080/23322039.2025.2457477>

Tiwana, A. (2014). *Platform ecosystems : aligning architecture, governance, and strategy*. Mk. https://www.researchgate.net/publication/286345261_Platform_Ecosystems_Aligning_Architecture_Governance_and_Strategy

Vallas, S., & Schor, J. B. (2020). What Do Platforms Do? Understanding the Gig Economy. *Annual Review of Sociology*, 46(1), 273–294. <https://doi.org/10.1146/annurev-soc-121919-054857>

Van Alstyne, M. W., Parker, G. G., & Choudary, S. P. (2017, March 21). *Pipelines, Platforms, and the New Rules of Strategy*. Harvard Business Review; Harvard Business Review. <https://hbr.org/2016/04/pipelines-platforms-and-the-new-rules-of-strategy>

Van Eijk, N et al., (2015) *Digital platforms: an analytical framework for identifying and evaluating policy options*. (2015). <https://www.ivir.nl/publicaties/download/1703.pdf>

Visa Corporate (2025) *Finland | Domestic Multi-lateral Interchange Fees*. Retrieved February 16, 2025, from <https://www.visa.co.uk/content/dam/VCOM/regional/ve/unitedkingdom/PDF/fees-and-interchange/april2024/finland-interchange-apr24.pdf>

Warnez, J. & Jöesaar, S. (2018) *Regulating and taxing platform businesses - An innovative blockchain solution for personal transportation in Denmark.*

<https://doi.org/10.13140/RG.2.2.29638.57925>

Yin, R. K. (2017). *Case Study Research and Applications Design and Methods.*

Washington DC Sage Publications. - References - Scientific Research Publishing.

<https://www.scirp.org/reference/referencespapers?referenceid=2909918>

Zhao, Y., von Delft, S., Morgan-Thomas, A., & Buck, T. (2020). The evolution of platform business models: Exploring competitive battles in the world of platforms. Pages 2-3. *Long Range Planning*, 53(4), 101892.

<https://www.sciencedirect.com/science/article/pii/S0024630118306368>

Zhou, Z., Zhang, L., & Van Alstyne, M. W. (2021). How Users Drive Value: Platform Investments that Matter. *SSRN Electronic Journal*.

<https://doi.org/10.2139/ssrn.3625355>

Appendices

Appendix 1. Calendar View of Dataset Periods

January						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Figure 11. Dataset 1: 1.1-14.1.2024.

January						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Figure 12. Dataset 2: 1.1-14.1.2025.

January						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

February						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29			

March						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Figure 13. Dataset 3: 18.1-16.3.2024.

January						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

February						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Figure 14. Dataset 4: 15.1-15.3.2025.