# Online Product Effectiveness Ranking & Analysis (OPERA)

Business Plan Report

**Team:**

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# Executive Summary

## Introduction

Online Product Effectiveness Ranking & Analysis Inc. (OPERA) will provide online marketing solutions to merchants worldwide, and help these sellers reach their full marketing potential.

OPERA will focus on bringing future-oriented technologies of machine learning and neural networks to online merchants who have struggled with adapting to the ever-growing online marketplace. OPERA can provide this service in a much more streamlined and effective way than other competitors, and for a lower price.

## Company Overview

OPERA will be registered in Vancouver, BC for tax purposes. The founders will be xxx, yyy, and zzz, all students of Computer Engineering with experience in machine learning.

The company will not have an office location, and will instead operate remotely for the foreseeable (five year) future. There will be a small number of   private investors, and we will not plan to be funded publicly.

The clients of the company will be individual e-commerce merchants looking to bolster their online presence. We expect to make an impact by focusing on clients who feel they may have missed out on the recent online shopping boom and are interested in using technology such as machine learning to improve their product rankings. Additionally, the company expects to have a working product by the end of Month 3, and will begin offering its services shortly thereafter.

## Services Offered

The main services OPERA offers include a web application and API to recommend keywords and prices for merchants on these online e-commerce sites such as Amazon. To further expand our user base and improve usability, we will also offer a Chrome extension that can give on-the-fly suggestions when users list their products.

To do this, the backend will make use of a machine learning model that uses sales history data, search engine priority, and similar product descriptions as training data. The model will then report the best keywords in each subcategory of products. The web app will be accessible through

any browser and have a user interface. In the future, the model will be expanded to give insight on market trends and demand forecasts.

## Market Overview

Online shopping has grown significantly since the beginning of the COVID 19 pandemic, and this growth has continued into 2021. This new demand for online products has attracted a far greater number of competing online merchants. To stand out from their newfound competition, merchants want to better connect with their customers, and want to make sure that their products show up first based on price and keywords used.

The market we are trying to target includes individual e-commerce merchants in Canada. Those merchants with underperforming products will be particularly interested in our application to boost their rank and reach more customers. In order to focus our market, we will first target merchants on Amazon and tailor our application to integrate with Amazon. We will also focus on smaller merchants rather than those with thousands of products.

## Financial Considerations

To fund the starting costs of our business, including our salaries and upfront infrastructure costs, we will seek outside private investors to fund $5,000, or 10% of our equity. The remaining investment will be done by the three founding members, each totaling 30% equity. In this way, we will maintain control over the business decisions while ensuring that we have enough capital to kickstart our company.

We will further fund our company by taking a $16,000 loan from the Royal Bank of Canada, which we will pay back over 2 years, starting in month 3 of our development cycle, since this is when we believe we will start to see sales revenue from our product.

# Background

## Mission Statement

OPERA's mission statement is:

*"To provide product research and intelligence solutions for e-commerce merchants."*

## Business Objectives

The goals for our business differ in scope and scale based on their time frame. In the short term (2 years), we want to target the Amazon marketplace, and establish a solid user base of at least 800 monthly clients. We also want to break even in terms of loans and investments by the end of this two year period.

In the long term (5 years), we want to further expand our client base by targeting another e-commerce marketplace, such as Ebay or Etsy. Additionally, we want to make sure that our clients buy into our solution long term, so we will aim to achieve a 6-month retention rate of at least 75%.

# Marketing

## Market Background

OPERA will be concentrating on the Canadian e-commerce market. We plan to focus our market towards individual sellers on Amazon, and expand to other marketplaces in the future. Recent statistics show the e-commerce market is booming, and our market analysis shows there is a large demand for services that help e-commerce merchants, especially on Amazon. 95.6% of the Canadian population has access to the internet in 2021, and this projection is anticipated to increase to nearly 100% in the future (Figure 1). When this number of internet users are faced with the recent pandemic, many people prefer to use e-commerce online rather than visit in-person markets. Recent statistics show that e-commerce sales increased almost 500% in 2020 compared to 2016, with an almost 200% growth after the pandemic alone. These statistics show OPERA will be able to target a large and growing e-commerce market.
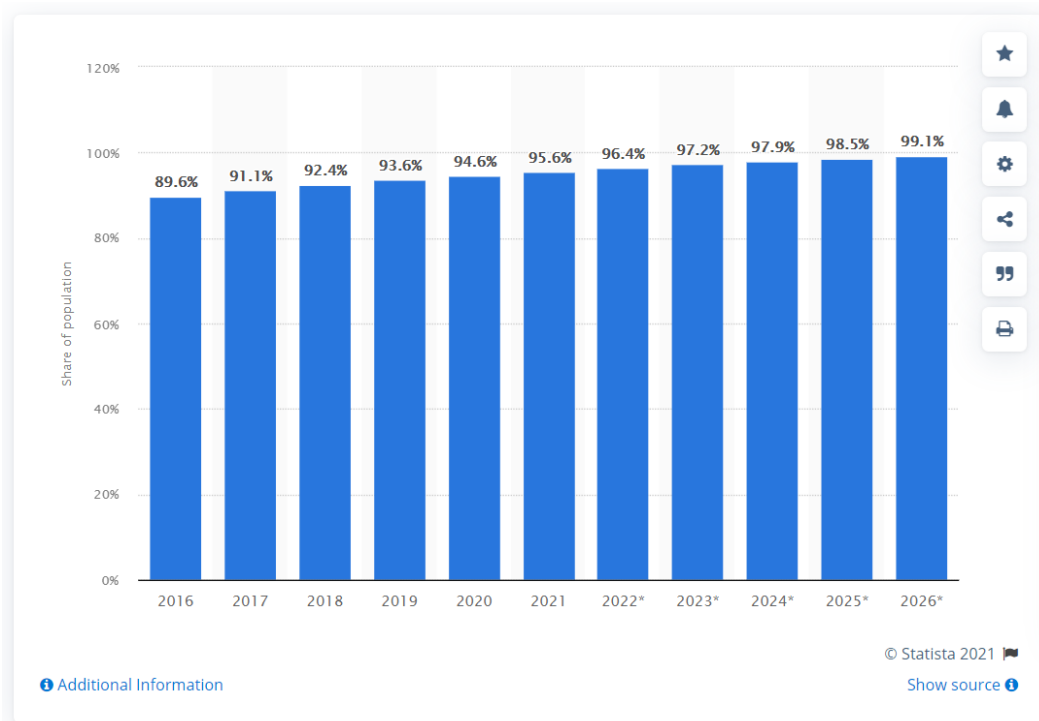
Figure 1: Internet User Penetration in Canada (2016 - 2026).

Source: Canada online usage penetration 2016-2026 Published by Joseph Johnson, Aug 24, 2021.

https://www.statista.com/statistics/373936/canada-online-penetration/

**Chart 1**
**Indexed monthly retail e-commerce sales vs. in-store sales**
index (Jan 2016 = 100)

Figure 2: Indexed Monthly Retail E-Commerce Sale vs In-Store Sales.
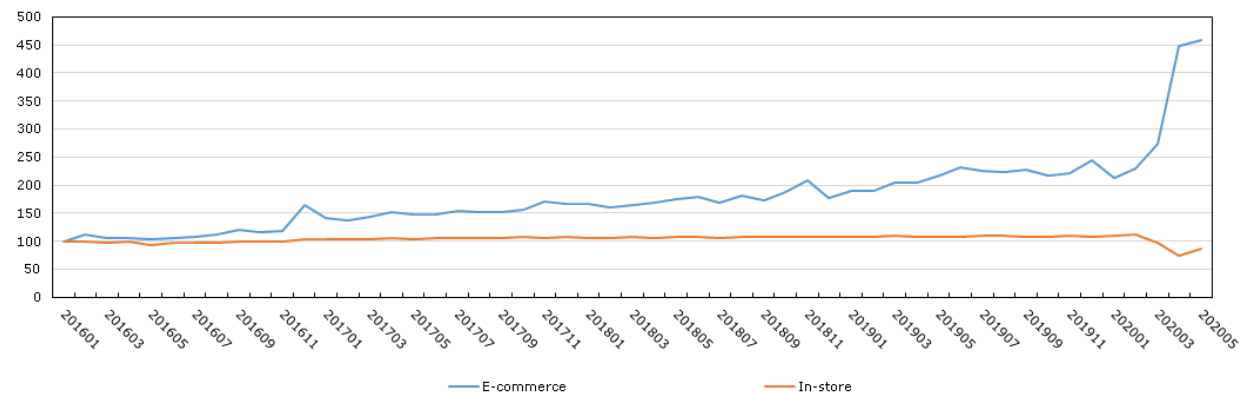
Source: Statistics Canada, Monthly Retail Trade Survey.

https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00064-eng.htm

# Market Analysis - Amazon Marketplace

Further analysis on the market shows that almost 50% of Amazon's total sales are generated by third-party sellers [1], and 55% of customers start their online shopping search from Amazon [2]. Furthermore, 90% of online customers price check listings on Amazon marketplace [2]. These statistics clearly show Amazon is leading in the e-commerce market, and prices and product descriptions are particularly important on Amazon, which is why we are planning to target the Amazon marketplace first.

# Market Analysis - Competitors

We have analyzed potential competitors already in the market and identified two main competitors. The first is SellerApp (https://www.sellerapp.com/), a relatively new product that has been available in the market for 4 years. SellerApp provides keyword recommendation for Amazon listings, but does not provide any price recommendation. Moreover, they only offer a web application for desktop. SellerApp follows a monthly subscription pricing scheme ranging from $49 to $99 per month.

Another competitor is Sellics (https://sellics.com/), which provides a free keyword recommendation tool for Amazon marketplace. This tool is not their main product and serves primarily as an add-on to their primary service, which include personal Pay-per-click advertising advisors. The service is also quite expensive at $259 to $1249 per month, and is clearly targeted towards larger sellers.

# Marketing Plan

The main distribution channel for OPERA's product is the Internet. Our clients will find our website through online ads on Amazon.com, Ebay.com, and other sites which e-commerce merchants are likely to use. Our subscription-based pricing model will be displayed clearly on our website, along with a way to reach us for further inquiries. We also use our own model to modify the website content for search engine optimization, so potential clients can find our website through searches such as "How to pick amazon product keywords" or "Amazon marketplace price analysis". The Chrome extension will also be available on the Chrome web store, which serves as another distribution channel.

Based on all the market research, we have decided to offer a lower base monthly price than competitors at $25 to $30 per month. This subscription will only allow you to track 1 - 5 product listings, but it allows us to target newer and smaller sellers that other competitors may drive away due to their more expensive subscription prices. The Chrome extension will be included in all tiers. Higher tier subscription plans, starting at $100 per month, will offer more product listings, direct customer support, and access to the price recommendation feature.

## Marketing Evaluation

The market we are trying to target is clearly full of potential, however some competitors exist that we must analyze and plan to stand out from. This is why we plan to offer a Chrome extension in addition to the web application, so users can analyze listings directly on their product page without any startup time or learning curve for our product. We will also offer more features such as price recommendation and demand analysis of products that other competitors do not focus on. Finally, our lower priced tier will allow us to focus our target market towards smaller sellers.

# Operations & Production

## Legal & Licensing Requirements

The company will require the user to accept our terms and conditions for the web application as well as the Chrome extension to act as a legally binding contract between the company and the client. As our product relies heavily on data intake and machine learning, we will need to ensure that all users are aware of the exact type of data that will be collected in regards to their product or online storefront.

The Chrome extension, similarly, will have to abide by Google's personal data regulations, meaning we will only collect data for use in our products if the client has agreed to our terms and conditions and privacy policy. Otherwise, no data will be saved or even collected.

## Management & Staffing

For management and staffing, we were pretty conservative with how we employ staff, as we do not expect the development side of things to require much work. So far we only need a project manager to handle the logistics, financing and marketing, we need a lead developer to make the front end and setup servers for our web application and chrome extension, and we need a data scientist / ML expert to develop and train the machine learning model, and connect it to our API so our other products can use it. At the beginning the customer support will be handled by the project manager, but as we expand and gain more customers, we anticipate hiring more staff for customer support.

## Security

To ensure security and insurance for our products, we will first backup all of our development code and machine learning code through Github and keep the client product information in AWS secure cloud storage. Both platforms are used by many companies, with AWS being used by many big name companies such as Samsung [3]. To ensure our client's data is safe, we will also regularly schedule backups on AWS. In addition, for extra security we will use 2FA for all

our logins and allow our clients to add 2FA to their accounts as well. Using 2FA adds a layer of protection against automated attacks, blocking 99.9% successfully [4].

## Storage & Deployment

We will use a private Github repository to host our project source code and machine learning model code. We will host the actual machine learning model data on an AWS container, and deploy our web application on AWS as well. Our Chrome extension will be deployed on the Chrome web store allowing us to gain additional exposure for the product.

# Financial Projections

## Assumptions

Our financial projections assume an interest rate of 0.25% annually, based on current predictions for Canada [5]. We also assume a conservative loan interest rate of 10%, to account for any errors in our predictions.

## Income and Expenses

Our expenses are mainly related to the salaries of the three founders. As we are fully capable of working from home, due to advances in remote collaboration technology, we will not have any expenses related to rent or utilities. However, the infrastructure previously outlined will have costs, in the ballpark of $10,000 going to AWS in the first year and increasing to $15,000 in the second. Additionally, the sales generated by the Chrome web store will come at a cost of 5% of revenue going to Google. The following figures demonstrate our expected Year 1 and Year 2 income/expenses.

## Year 1 Income

Total Income: $122,125



- Kieran Gallagher (30% Equity) — 12.3% — $15,000
- Yon Zhou (30% Equity) — 12.3% — $15,000
- Shawn Zhou (30% Equity) — 12.3% — $15,000
- Private Investment (10% Equity) — 4.1%
- RBC Loan — 13.1% — $16,000
- Sales — 46.0% — $56,125
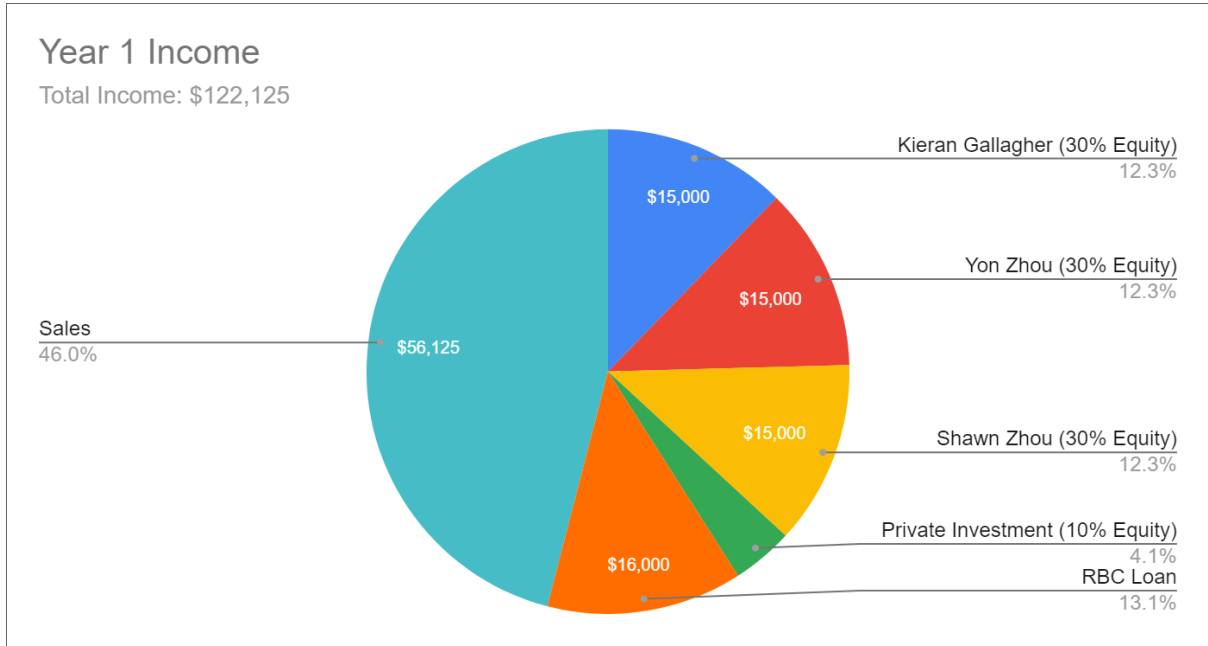
Figure 3. Year 1 Projected Income.

## Year 1 Expenses

Total Expenses: $121,683



- Loan Payment — 4.3%
- Chrome Fees — 1.2%
- AWS — 8.2%
- Kieran Gallagher — 28.8% — $35,000
- Yon Zhou — 28.8% — $35,000
- Shawn Zhou — 28.8% — $35,000
- $10,000
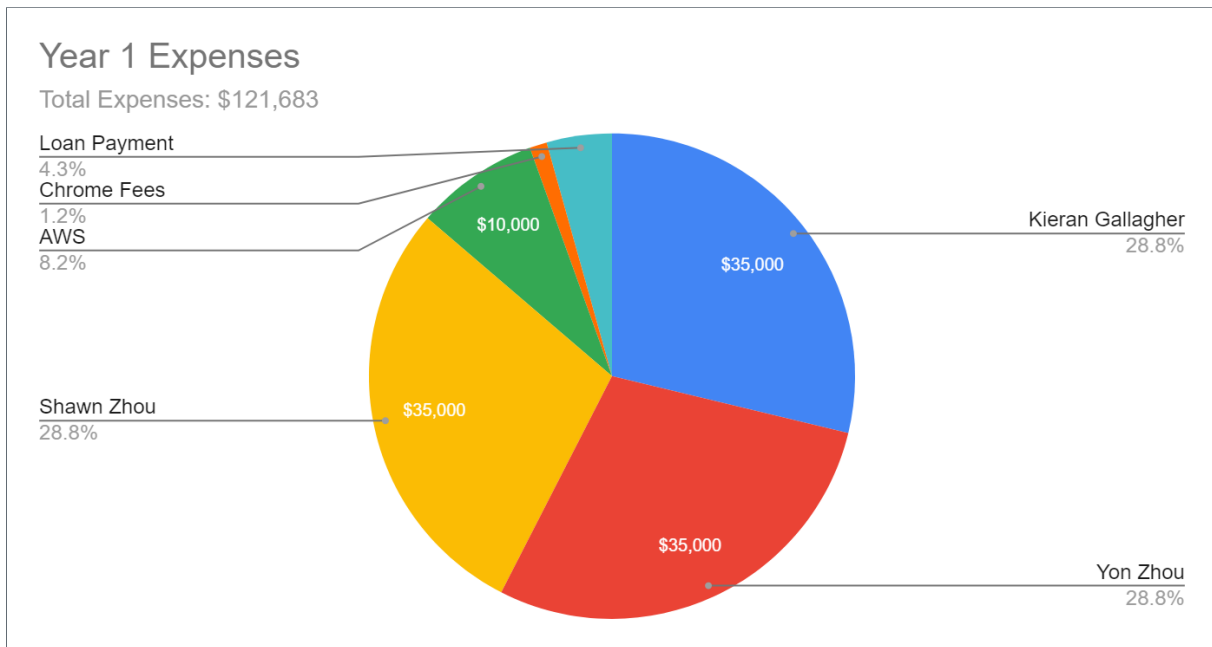
Figure 4. Year 1 Projected Expenses.

## Year 2 Income

Total Income: $222,450

Cumulative Income by EOY: $344,575

$222,450

Sales
100.0%
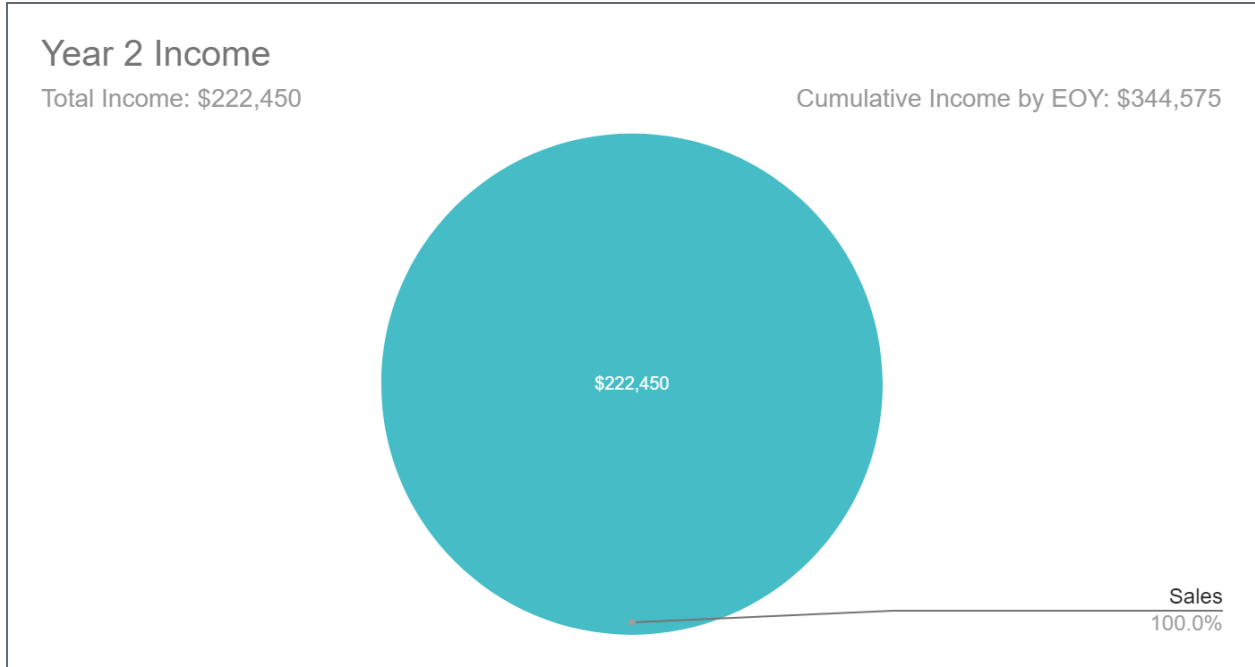
Figure 5. Year 2 Projected Income.

## Year 2 Expenses

Total Expenses: $167,385

Cumulative Expenses by EOY: $289,068

Loan Payment
7.1%

Chrome Fees
3.3%

AWS
9.0%

$11,824

Kieran Gallagher
26.9%

$45,000

$15,000

Shawn Zhou
26.9%

$45,000

$45,000

Yon Zhou
26.9%
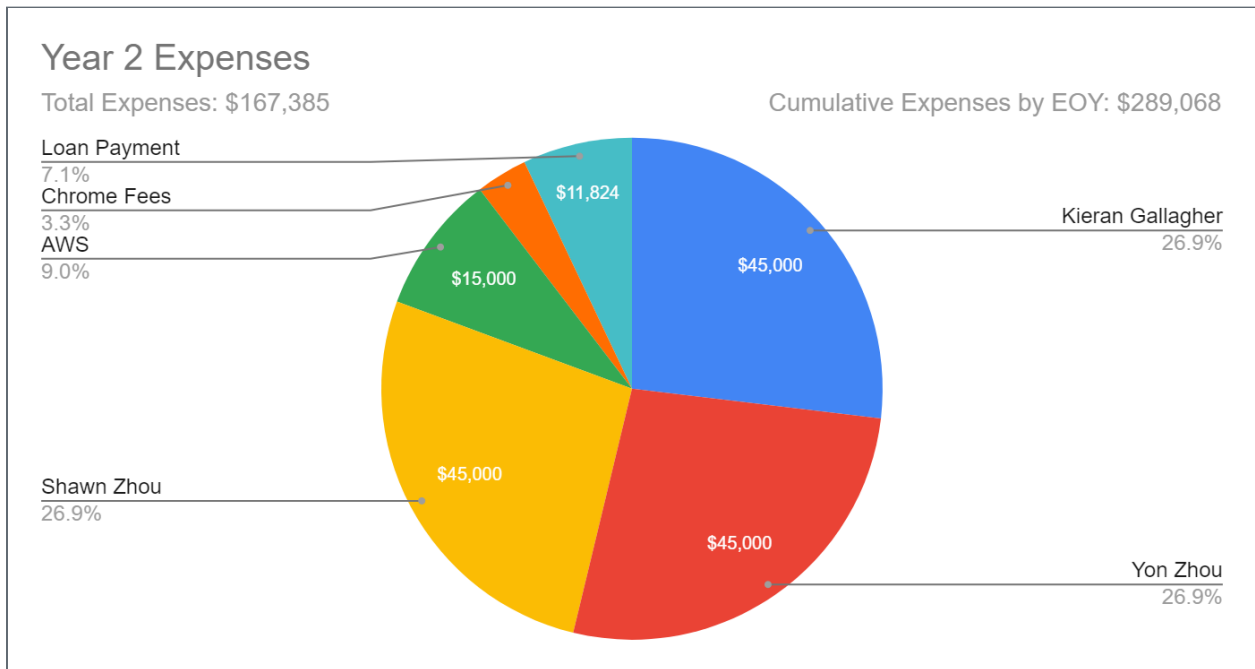
Figure 6. Year 2 Projected Expenses.

# Financial Forecasts

As outlined previously, we will have two pricing tiers for our clients, with the lower tier and higher tier costing $25 and $100 per month, respectively. Our timeline is to have a functional product by the end of our first three months, meaning we will not have any clients or sales right away. After this point, as our marketing focus increases, we plan on having an increase in our user base of roughly 40 clients per month, leading to a cumulative sales forecast of $278,000 at the end of year 2.
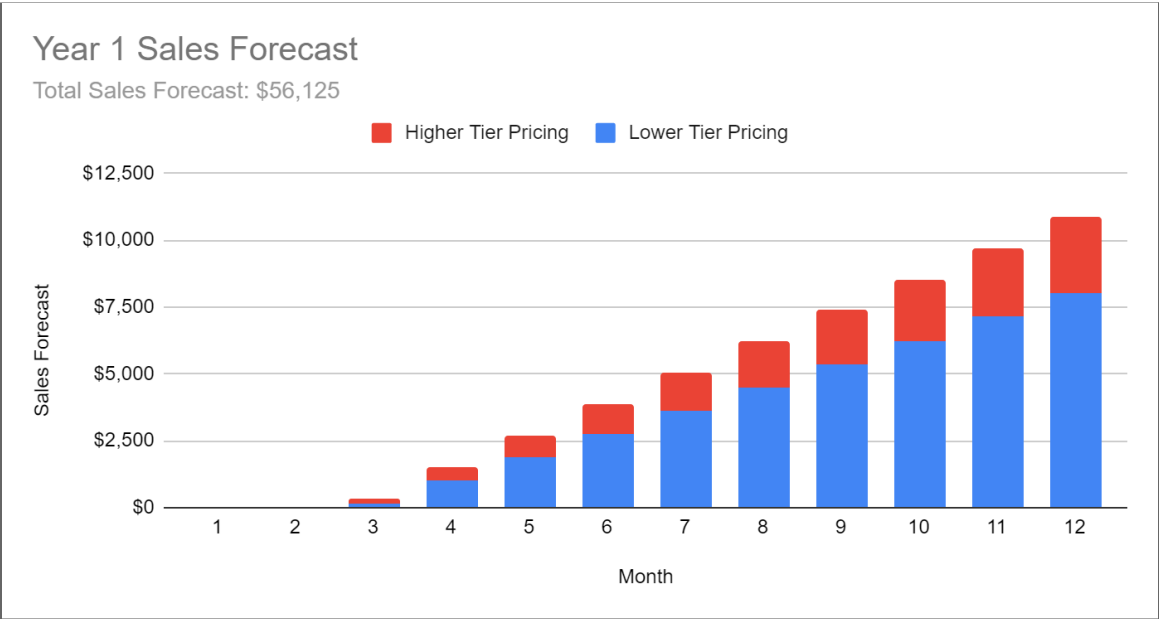


Figure 7. Year 1 Sales Forecast.
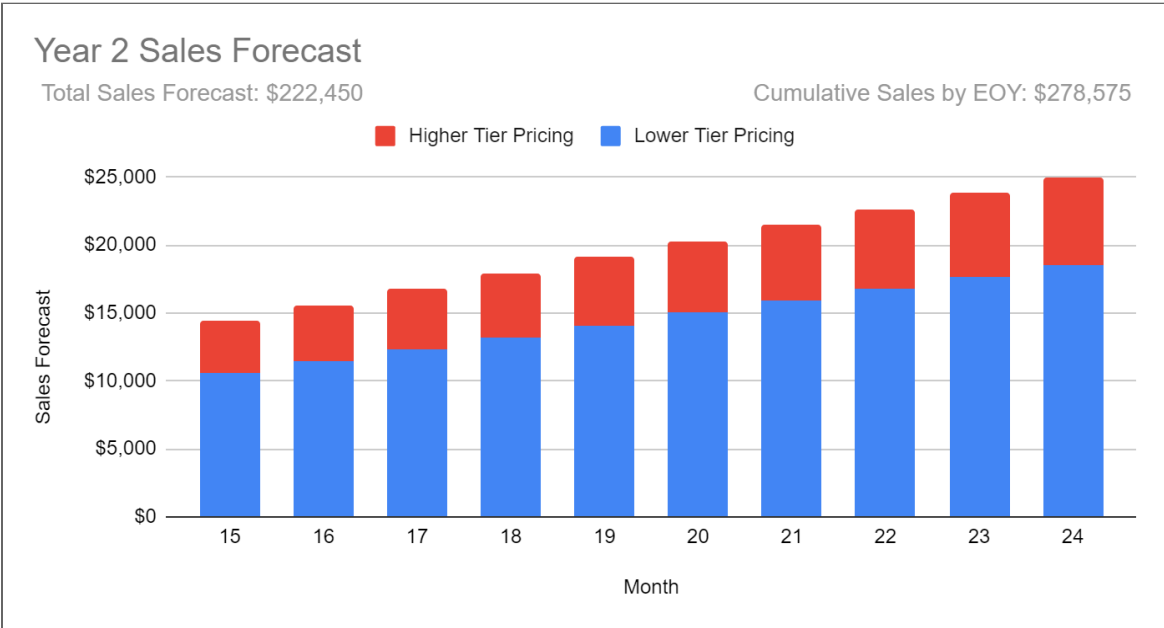


Figure 8. Year 2 Sales Forecast.

# Implementation Timeline

We have detailed a plan to finish the web application, API, and Chrome extension by the expected three month deployment time. Work will be split across developing and training the machine learning model, developing the web application and API, developing the Chrome extension, and marketing the product through website design and search engine optimization.

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Machine Learning Development** | | | | | | | | | | | | |
| Data Ingestion | █ | █ | | | | | | | | | | |
| Data Exploration | | █ | █ | | | | | | | | | |
| Data Pipelining | | | █ | █ | █ | █ | █ | █ | █ | | | |
| **Web Application and API** | | | | | | | | | | | | |
| Front-End Design | █ | █ | | | | | | | | | | |
| Front-End Development | | █ | █ | █ | █ | █ | | | | | | |
| Back-End Database | | | | | █ | █ | █ | █ | █ | | | |
| API Development | | | | | | | █ | █ | █ | █ | █ | █ |
| **Chrome Extension** | | | | | | | | | | | | |
| Extension Development | | | | | | | █ | █ | █ | █ | █ | █ |
| **Product Marketing** | | | | | | | | | | | | |
| Website Design | █ | █ | █ | █ | █ | █ | | | | | | |
| Website Development | | | | | | █ | █ | █ | █ | █ | █ | |
| Search Engine Optimization | | | | | | | | | | | | █ |

Figure 9. Gantt chart for 3-month implementation timeline.

# References

[1] Bain, M. (n.d.). *Amazon's unruly third-party marketplace now sells more stuff  than Amazon itself.*Quartz. Retrieved December 9, 2021, from https://qz.com/1256651/amazon-marketplace-sold-more-stuff-than-amazon-itself-in-2017/?_ga=2.173547296.2098140275.1630898120-2032210114.1628524299.

[2] Gustafs, Krystina. (2016, September 28). *More shoppers are starting their online search on Amazon.* CNBC. Retrieved December 9, 2021, from

https://www.cnbc.com/2016/09/27/amazon-is-the-first-place-most-online-shoppers-visit.html?_ga=2.14171444.2098140275.1630898120-2032210114.1628524299.

[3] Yahoo! (n.d.). *15 biggest companies that use AWS*. Yahoo! Finance. Retrieved December 11, 2021, from
https://finance.yahoo.com/news/15-biggest-companies-aws-011011152.html?guccounter=1&amp;guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&amp;guce_referrer_sig=AQAAAKFN9b4eZ2i9mUtkPVHibsC1Iyw0oJOVX4q57C_TqD9vxzJKZL_pm1z0nK08amOXoGyF3rOE4NfeHEhtQPqck9NgH6kxj_AW_OVBOX9mLDVEBHklP5HeSMI3Sqr4fvU4wDinaY_4NOtnrj3rFFg6WlGF4UzeX893bWbkeoM4S8dy.

[4] Bott, E. (2021, April 15). *Better than the best password: How to use 2FA to improve your security*. ZDNet. Retrieved December 11, 2021, from
https://www.zdnet.com/article/better-than-the-best-password-how-to-use-2fa-to-improve-your-security/.

[5] *Canada interest Rate 2021 Data: 2022 forecast: 1990-2020 historical: Calendar.* Canada Interest Rate | 2021 Data | 2022 Forecast | 1990-2020 Historical | Calendar. (n.d.). Retrieved December 11, 2021, from https://tradingeconomics.com/canada/interest-rate.

# Appendix

| Sales forecast | Lower Tier Pricing | $25 | Higher Tier Pricing | $100 |
|---|---|---|---|---|
| Month | Customers | Total Income | Customers | Total Income |
| 1 | 0 | $0 | 0 | $0 |
| 2 | 0 | $0 | 0 | $0 |
| 3 | 5 | $125 | 2 | $200 |
| 4 | 40 | $1,000 | 5 | $500 |
| 5 | 75 | $1,875 | 8 | $800 |
| 6 | 110 | $2,750 | 11 | $1,100 |
| 7 | 145 | $3,625 | 14 | $1,400 |
| 8 | 180 | $4,500 | 17 | $1,700 |
| 9 | 215 | $5,375 | 20 | $2,000 |
| 10 | 250 | $6,250 | 23 | $2,300 |
| 11 | 285 | $7,125 | 26 | $2,600 |
| 12 | 320 | $8,000 | 29 | $2,900 |

| | | | | |
|---|---|---|---|---|
| 13 | 355 | $8,875 | 32 | $3,200 |
| 14 | 390 | $9,750 | 35 | $3,500 |
| 15 | 425 | $10,625 | 38 | $3,800 |
| 16 | 460 | $11,500 | 41 | $4,100 |
| 17 | 495 | $12,375 | 44 | $4,400 |
| 18 | 530 | $13,250 | 47 | $4,700 |
| 19 | 565 | $14,125 | 50 | $5,000 |
| 20 | 600 | $15,000 | 53 | $5,300 |
| 21 | 635 | $15,875 | 56 | $5,600 |
| 22 | 670 | $16,750 | 59 | $5,900 |
| 23 | 705 | $17,625 | 62 | $6,200 |
| 24 | 740 | $18,500 | 65 | $6,500 |

Table A.1. Monthly Sales Forecast For First 2 Years.

| Income | | Year 1 | Year 2 | Cumulative |
|---|---|---|---|---|
| **Investments** | Kieran Gallagher (30% Equity) | $15,000 | $0 | |
| | Yon Zhou (30% Equity) | $15,000 | $0 | |
| | Shawn Zhou (30% Equity) | $15,000 | $0 | |
| | Private Investment (10% Equity) | $5,000 | $0 | |
| **Loans** | RBC Loan | $16,000 | $0 | |
| | **Sales** | $56,125 | $222,450 | $278,575 |
| | | | | |
| | **Yearly Total** | $122,125 | $222,450 | $344,575 |

Table A.2. Income Summary For First 2 Years.

| Expenses | | Year 1 | Year 2 | Cumulative |
|---|---|---|---|---|
| **Salaries** | Kieran Gallagher | $35,000 | $45,000 | |
| | Yon Zhou | $35,000 | $45,000 | |
| | Shawn Zhou | $35,000 | $45,000 | |
| **Licensing** | AWS | $10,000 | $15,000 | |

|  |  |  |  |  |
|---|---|---:|---:|---:|
|  | Chrome Fees | $1,403 | $5,561 |  |
|  | Loan Payment | $5,641 | $12,685 |  |
|  |  |  |  |  |
|  | **Yearly Total** | $122,044 | $168,246 | $290,290 |
|  |  |  |  |  |
|  | **EOY Balance** | $81 | $54,285 |  |
|  | **EOY Balance - Loan Balance** | -$10,278 | $54,285 |  |

<u>Table A.3. Expenses Summary For First 2 Years.</u>

| **Loan Repayment** |  |  |  |  |
|---|---|---|---|---|
| **Month** | **Starting Amount Owed** | **Interest** | **Amount Paid** | **Ending Amount Owed** |
| 1 | $16,000 | $140 | $0 | $16,140 |
| 2 | $16,140 | $141 | $0 | $16,280 |
| 3 | $16,280 | $142 | $0 | $16,423 |
| 4 | $16,423 | $143 | $490 | $16,075 |
| 5 | $16,075 | $140 | $539 | $15,676 |
| 6 | $15,676 | $137 | $566 | $15,247 |
| 7 | $15,247 | $133 | $595 | $14,785 |
| 8 | $14,785 | $129 | $624 | $14,290 |
| 9 | $14,290 | $125 | $656 | $13,759 |
| 10 | $13,759 | $120 | $688 | $13,190 |
| 11 | $13,190 | $115 | $723 | $12,583 |
| 12 | $12,583 | $110 | $759 | $11,934 |
| 13 | $11,934 | $104 | $797 | $11,241 |
| 14 | $11,241 | $98 | $837 | $10,502 |
| 15 | $10,502 | $92 | $879 | $9,715 |
| 16 | $9,715 | $85 | $923 | $8,877 |
| 17 | $8,877 | $77 | $969 | $7,986 |
| 18 | $7,986 | $70 | $1,017 | $7,039 |
| 19 | $7,039 | $61 | $1,068 | $6,032 |
| 20 | $6,032 | $53 | $1,121 | $4,963 |
| 21 | $4,963 | $43 | $1,177 | $3,829 |

| | | | | |
|---|---|---|---|---|
| 22 | $3,829 | $33 | $1,236 | $2,626 |
| 23 | $2,626 | $23 | $1,298 | $1,351 |
| 24 | $1,351 | $12 | $1,363 | $0 |
| | | | | |
| | | Sum of Payments | | |
| | | Year 1 | $5,641 | |
| | | Year 2 | $12,685 | |

Table A.4. Loan Repayment Schedule.