**Text, logo

Description automatically generated with medium confidenceTEAM MEMBERS**

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# **ABSTRACT**

Counterfeit products, which aim to deceive consumers by imitating valuable goods that underperform, are a pressing business and social problem. The production of counterfeit goods carries significant economic and reputational costs to nations worldwide, costing Canada between $20-30 billion and the global economy $1.7 - 4.5 trillion. This issue is further exacerbated by factors such as widely recognized brands and logos, and easy-to-replicate packaging, which increases the likelihood of counterfeit product production.

The domain of footwear, specifically sneakers, is one of the most counterfeited industries, with a counterfeit sneaker market worth $450 billion, nearly 4.5 times greater than the authentic sneaker market valued at over $100 billion (The Economist, 2022). The U.S. Customs and Border Protection seized almost $96.7 million of counterfeit footwear in 2021, which increased by $63.1 million from the previous year. Although the detection of counterfeit sneakers and footwear is predominantly human-driven, it has become increasingly insufficient to expedite the identification of counterfeit products. Therefore, an artificial intelligence (AI) and machine learning (ML) driven solution are necessary to augment the detection process (Somasundaram, 2022).

To combat counterfeit products in the sneaker industry, FAKEBLITZ proposes the implementation of an AI-based solution that aims to detect counterfeit sneakers with a high degree of accuracy. The company's objective is to develop a multiplatform solution that can achieve a success rate of nearly 99 percent by leveraging the capabilities of ML algorithms such as Naïve Bayes Classifier and Deep Learning. Specifically, the solution will manifest as a mobile application that utilizes colour detection, sneaker texture, and logo recognition to differentiate between authentic and counterfeit sneakers.

In this project, FAKEBLITZ is not only concerned with identifying counterfeit sneakers but also with satisfying the needs of various stakeholders. The development team responsible for implementing the AI solution and generating results, footwear companies potentially affected by the identification of counterfeit products and the investors or funders who have a financial stake in the success of FAKEBLITZ. Other stakeholders may include regulatory bodies and government agencies responsible for enforcing anti-counterfeiting laws and protecting intellectual property rights.

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# **BACKGROUND & RATIONALE**

## **PROBLEM STATEMENT**

To comprehend the factors that fuel the production of counterfeit sneakers, it is crucial to scrutinize additional elements that contribute to the prevalence of such products. In the contemporary fashion-oriented footwear industry, sneakers have emerged as the most potent category in the millennial-driven online luxury market and have become an emblem of social status. As symbols of status, sneakers possess a unique blend of social significance and individual history that surpasses premium materials, innovative design, and striking aesthetics. Consequently, it is unsurprising that consumers aspire to acquire sneaker collections that validate their social status. However, due to the exorbitant prices of authentic sneakers, consumers now prioritize value over authenticity and resort to the black market and counterfeit products to obtain legitimacy without spending hundreds to thousands of dollars (Gupta, 2022).

Counterfeit sneaker production is currently at an all-time high due to various factors, such as the e-commerce revolution and COVID-19. The resell market alone in the U.S. is worth $2 billion a year, and the demand for fakes has risen due to the limited quantity of genuine products. China is the main source of counterfeit sneakers, with Putian City being the hub of black-market production. The dependence on China to produce genuine sneakers and the high demand for sneakers means that it is unlikely that counterfeit sneaker production will decrease anytime soon (The Economist, 2022).

The counterfeit sneaker market has several adverse impacts, such as damaging the local and global economy, with Canada alone losing between $20-30 billion, and footwear companies losing revenue. Moreover, these operations do not pay taxes, resulting in an economic burden, and hindering social assistance programs and infrastructure development. Counterfeit sneaker production also involves illegitimate employment, promoting child labour and slavery in sweatshops, which violate human rights and disregard safety and health. The use of cheap and low-quality toxic materials further exacerbates the issue. Lastly, the production of counterfeit products may discourage companies from producing authentic sneakers since consumers choose to purchase cheaper fake imitations without regard for the company's intellectual property (Scott, 2020).

## **CURRENT SOLUTIONS AND THEIR CHALLENGES**

Presently, the implementation of human authenticators is favoured by numerous companies to screen the production process of sneakers. This process initiates by scrutinizing the shoebox that contains the sneakers. Some companies presume that non-authenticators cannot detect fraudulent elements in the production process. Thus currently, human authenticators are required to be well-versed in comprehending every brand and sneaker style available on retail platforms. Besides relying on undercover agents, companies resort to cooperative agents to apprehend counterfeit sellers. Educating consumers on the counterfeit market and distinguishing between genuine and fake products also assists in curbing counterfeit sales, especially on e-commerce platforms. Advanced technology, such as blockchain technology, is now leveraged by companies to identify counterfeit sneakers. By using chips and tags that store immutable information, the authenticity of sneakers can be verified & expedite the screening process.

The current approach companies are using to authenticate sneakers has some limitations. Relying on human authenticators may result in human error and inaccuracies, as humans can only retain limited details about items. Such an approach can be time-consuming and lead to false positive or negative results. As a result, educating consumers about the counterfeit market and methods to detect may not be sufficient to avoid buying fake products. Consumers may benefit significantly from a hands-on approach leveraging AI technology to differentiate counterfeit sneakers from authentic sneakers. This is where FAKEBLITZ offers customers the chance to screen their products and avoid the sale of counterfeit sneakers, thus mitigating the problem (Staff, 2019).

## **THE AI / ML SOLUTION**

### **AI TECHNOLOGIES**

The identification of counterfeit products relies on the subtlest variations or disparities between the original product and the counterfeit product. To accurately detect these minute differences and distinguish them from accidental production errors, FAKEBLITZ aims to leverage advanced technologies that focus on the critical features of sneakers, including printed text, product texture, and images, to facilitate differentiation between counterfeit and authentic products (see Table A).

#### **Table A: FAKEBLITZ’S AI Technologies**

|  |  |
| --- | --- |
| **Technology** | **Justification** |
| **Text Analysis** | * The text on a sneaker includes brand representation, product information, abbreviations, taglines, and logograms that indicate the company and product. |
| **Text Recognition** | * The texture recognition method distinguishes genuine products from counterfeits by analyzing unique manufacturing details such as stitching patterns, materials, and layers. This method employs pre-trained models from extensive datasets to classify incoming products as either original or counterfeit (Roy & Patil, r.2023). |
| **Image Recognition** | * Image recognition identifies pixelated data from models to identify original products (Roy & Patil, r.2023). |
| **Shape Detection** | * Shape detection, a subcategory of image detection, focuses on identifying consistency between the shape and placement of logos on authentic products and any significant variation from it as seen in counterfeit products. |
| **Colour Detection** | * Distinctive hues are associated with certain brands or companies and their product lines. With high-resolution images, AI can identify even the slightest variations in shades, enabling it to distinguish between authentic and counterfeit products. |

By utilizing both text analysis and image recognition, FAKEBLITZ can identify the unique features of authentic products such as font type and size, spelling, and logographs. The 'edit distance' method can then be used to detect any inconsistencies by determining the number of edits required to transform one spelling to another, highlighting any alteration or replacement of letters that distinguish original products from counterfeit ones. (Manning, Raghavan, Schütze, Cambridge UP, 2008).

The AI-based image recognition technology can detect subtle features such as logo placement, patterns, and pixelated data to identify authentic sneakers from counterfeit ones. Although slight manufacturing errors could be overlooked, the combination of text analysis and image recognition provides an ideal solution, as the AI will be trained on vast datasets and uses multiple detection techniques (Roy & Patil, r.2023).

### **ML ALGORITHMS**

The Naïve Bayes Classifier is a potent ML algorithm applied in pattern recognition and fault prediction. It amalgamates signals derived from multiple sources, enabling the AI to be trained using more extensive datasets and producing higher prediction accuracy than other classifiers. Naïve Bayes is also a probabilistic algorithm that applies Bayes' theorem to classify data. It supposes that features are independent of each other and that the likelihood of each feature is of equal significance in the classification process. Further, it is commonly utilized in text classification (Roy & Patil, r.2023).

Deep Learning is a valuable subset of ML that utilizes neural networks to classify complex datasets. This technique is ideal for image recognition as it can detect patterns and relationships that traditional statistical methods can’t. It is therefore an essential tool in training AI systems to differentiate between genuine and counterfeit products using vast datasets from both classes (Roy & Patil, r.2023).

**AVOIDING MISCLASSIFICATION**

To ensure accurate classification and minimize the risk of misclassification, several techniques can be employed. Firstly, the model can be trained on large datasets using ML algorithms that consider various aspects, including pixel size, lighting, contrast conditions, and various angles. This approach allows the model to recognize data that is not limited to a specific environment. Secondly, fine-tuning the model on a smaller dataset from the target environment can improve pattern recognition, thus reducing misclassification. Thirdly, transfer learning can be used to retrain a pre-trained model on a new dataset, leveraging knowledge and experience gained from previous training datasets. Lastly, constant evaluation and adjustment of hyperparameters, layer addition, architecture changes, and reforming the model can help ensure accurate detection and prevent compromises during the detection process.

FAKEBLITZ’s AI solution will also be evaluated by various performance metrics (see Appendix A). By carefully evaluating these metrics, it is possible to optimize the performance of the solution over time and improve its effectiveness in detecting counterfeit sneakers.

# **RESOURCES**

## **DATA & ITS AVAILABILITY**

To obtain a reliable source of authentic data, FAKEBLITZ intends to partner with major manufacturers such as Nike, Adidas, New Balance, Air Jordan, Dior, and Balenciaga. In case the data obtained from these sources is insufficient, FAKEBLITZ will look to public datasets such as Kaggle, GitHub, UCI Machine Learning Repository, and government datasets. The data received will be categorized into three distinct types: text, categorical, and numerical. Text data includes metadata and user feedback, such as the brand, model, size, location, and price. Categorical data is structured and historical data that contains product feature information, such as the size, colour, and material of the logo. Numeric data incorporates image and pixel data that includes numeric values of the pixel values in images or just images.

Before accessing the data, it is imperative to consider restrictions, limitations, and privacy concerns. The collection, utilization, and sharing of customer data are governed by privacy regulations such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA). Data obtained from public datasets such as Kaggle, GitHub, and UCI Machine Learning Repository may have licensing constraints that necessitate verifying their terms of use. Similarly, data from partnering manufacturers such as Nike, Adidas, New Balance, Air Jordan, Dior, and Balenciaga will contain confidential information, necessitating a non-disclosure agreement. Lastly, labelling data as authentic or counterfeit will be crucial, and misclassification should be avoided with careful handling.

In examining the data preparation process, FAKEBLITZ places significant importance on the data cleansing stage. This stage includes various tasks, such as eliminating duplicates, removing redundant columns and rows, correcting structural errors, removing miscellaneous values such as #, $, and @, detecting and addressing outliers, filling in missing values, and validating the data to ensure its usability.

In preparation for the AI/ML model, the data must undergo a detailed and comprehensive preparation process. The initial steps include collecting and storing datasets based on data type and format, followed by the first data cleaning process. Subsequently, data normalization is performed to ensure that all data points are scaled to the same standard, followed by resizing and conversion of images to a standard format such as RGB using Python libraries like OpenCV, Pillow, and NumPy. This will be followed by feature extraction, where relevant features containing logo information are extracted and transferred to CSV files. Data scraping will be completed using automated software tools like Beautiful Soup and Scrapy to extract information from websites, followed by data parsing, in which information is analyzed and broken down into smaller components. The data will then be integrated by combining information from different sources into a single file, where a second round of data cleaning will be completed. The final step will involve data labelling, labelling each form of media as either genuine or counterfeit to enable the AI/ML model to recognize and differentiate between the two.

In the process of data preparation, FAKEBLITZ has acknowledged that data scraping may be illegal, specifically when it involves violating copyright laws or accessing restricted websites. This could lead to Copyright infringement and violations of the Computer Fraud and Abuse Act, particularly if scraping techniques are used to bypass website security measures. Additionally, FAKEBLITZ may violate website terms of service by using automated software tools to extract data from websites like UCI Machine Learning Repositories, which prohibit this practice. To mitigate these issues, FAKEBLITZ plans to strictly adhere to ethical standards and legal regulations when accessing and using data.

## **TECHNOLOGY**

A comprehensive needs assessment and discovery process is crucial to ascertain the current state of technology in potential client organizations. FAKEBLITZ acknowledges that eBay's Authenticate program utilizes the services of Entrupy to authenticate sneakers; however, it mandates the organization to acquire expensive, bulky equipment that restricts the mobility of the authentication process to warehouses, as reported by Inverse (2018). Nonetheless, FAKEBLITZ primarily caters to retail resellers (resellers) and individual consumers, and it is presumed that most organizations involved in sneaker production, distribution, and sales have already adopted some level of technology to detect counterfeit products.

As a provider of counterfeit sneaker detection services, FAKEBLITZ intends to provide a cutting-edge technology solution that utilizes ML and computer vision algorithms to identify even the most intricate counterfeit sneakers. By integrating seamlessly into resellers' existing supply chain processes and the daily movements of individual consumers, FAKEBLITZ's technology aims to offer a smooth and effortless integration.

To ensure compatibility between FAKEBLITZ's technology and that of resellers, the company intends to provide various integration options such as APIs, SDKs, and other software and hardware systems to integrate and process first-party data (see Appendix B). Furthermore, FAKEBLITZ will offer training and support to guarantee that resellers and individual consumers can use the solution competently and with ease.

Furthermore, the FAKEBLITZ solution can provide significant data and analytics that could assist major manufacturers and resellers in making informed decisions regarding their supply chain operations. For example, it could provide valuable insights into counterfeit activity patterns that may guide anti-counterfeiting strategies and identify potential areas of improvement in their supply chain procedures.

## **HUMAN TALENTS**

In recognition of the importance of creating an effective solution, FAKEBLITZ understands that forming a team of highly skilled experts is critical. Achieving this goal necessitates assembling a diverse group of professionals who are proficient in various fields.

FAKEBLITZ has hired the following credited individuals for various purposes: a Mobile App Developer to create a user-friendly mobile application that can be easily accessed by the customers, a Software/Web Developer to work on the front-end and back-end development of the platform – experts in programming languages such as Python and JavaScript, cloud computing, and databases such as AWS and MySQL, a UX/UI Designer to design an intuitive and attractive interface that can enhance the user experience, a ML Engineer with proficiency in implementing Naïve Bayes, deep learning, and computer vision to play a vital role in building the fundamental technology behind the solution, a Quality Assurance Engineer to ensure the solution meets the desired level of quality by testing and validating it, a Marketing Specialist to help promote the solution and increase its visibility among potential consumers, and finally a Product Owner/Scrum Master, Technical Lead, Project Manager, Business Analyst, and Risk Manager will be hired to ensure smooth collaboration, efficient management, and effective problem-solving. Overall, the diverse team of professionals ensures FAKEBLITZ delivers a robust and successful solution that meets consumers' needs while adhering to ethical standards and legal regulations.

## **MARKET, COMPETITION, & COLLABORATION**

Counterfeit products present a significant challenge for resellers as they damage market strategies. Resellers risk financial and reputational loss as customers may blame them for selling substandard goods, reducing trust and brand image. Additionally, counterfeit products saturate the market, lowering demand and profit margins. This undermines market strategy by eroding trust, reducing margins, and decreasing perceived value.

To succeed in the detection market, FAKEBLITZ must understand potential competitors, identify opportunities, and recognize potential threats and challenges before entering. They have identified three main competitors in the counterfeit industry: VISUA, CheckCheck, and Amazon Rekognition.

VISUA is a direct competitor of FAKEBLITZ that offers effective counterfeit detection platforms that use visual AI to analyze images and videos, allowing for accurate and efficient identification of counterfeit products. The technology has a success rate of up to 99.7 percent, is customizable, and has been implemented in various industries such as luxury goods, pharmaceuticals, and consumer electronics (VISUA, n.d.).

CheckCheck is another direct competitor of FAKEBLITZ in the counterfeit industry, using patented "Optical Signature Recognition" technology to identify and verify products in real time. This technology captures a product's unique optical signature, which is then analyzed by ML algorithms to detect potential counterfeits via a mobile application for consumers to verify product authenticity (CheckCheck, n.d.). CheckCheck's innovative technology and industry application make it a significant competitor in the counterfeit detection market.

Amazon Rekognition is an AI-powered image and video analysis service used in anti-counterfeiting efforts. It can recognize logos and brand marks commonly targeted by counterfeiters and offers text detection capabilities to identify fake product labels and packaging. However, compared to specialized anti-counterfeiting solutions like VISUA and CheckCheck, Amazon Rekognition may not offer the same level of accuracy and precision in detecting counterfeit products. Furthermore, the high cost of the service may also be a barrier for smaller businesses implementing anti-counterfeiting measures for the first time (Amazon Web Service, n.d.).

### **FAKEBLITZ’S COMPETITIVE ADVANTAGE**

Compared to all three competitors, FAKEBLITZ holds a competitive advantage with instant counterfeit reporting, multiplatform flexibility, and direct marketplace access (see Table B). These features enable immediate reporting of counterfeit products, utilization on different devices, and access to an authentic-sneakers-only marketplace. This unique and innovative solution can help support resellers to establish themselves as a leader in the industry and increase customer loyalty and satisfaction. Additionally, FAKEBLITZ has the potential to improve a reseller's market share and position significantly by establishing them as trustworthy and reliable sources of authentic products.

#### **Table B: Competitive Analysis Matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Features** | **VISUA** | **CheckCheck** | **Amazon Rekognition** | **FAKEBLITZ** |
| **Logo Detection** | **X** | **X** | **X** | **X** |
| **Text Detection** | **X** | **X** | **X** | **X** |
| **Object Detection** | **X** | **X** | **X** | **X** |
| **Image Processing Analysis** | **X** | **X** | **X** | **X** |
| **Image Classification** | **X** |  | **X** | **X** |
| **Instant Logo Learning** | **X** | **X** |  | **X** |
| **Counterfeit Reporting** |  |  |  | **X** |
| **End-user Flexibility** |  |  |  | **X** |
| **Auto Resell / Marketplace** |  |  |  | **X** |

### **COLLABORATION**

Implementing FAKEBLITZ can significantly impact reseller collaborations by reducing risks associated with counterfeit products, leading to greater trust between resellers and manufacturers. FAKEBLITZ provides an additional layer of authentication that reduces counterfeit risks and increases confidence between both parties. Additionally, the solution promotes transparency and trust among the reseller community and between resellers and their customers. These benefits foster a more collaborative and mutually beneficial relationship between resellers, manufacturers, and individual consumers.

**DIVERSIFICATION**

FAKEBLITZ has the potential to diversify in the long run; laterally into other counterfeit-prone industries like luxury goods or pharmaceuticals, vertically into supply chain management like manufacturing, and horizontally into related products such as inventory management. This could expand its market and AI-based solution to more clients, reduce dependence on sneakers, and mitigate risks of market fluctuations. However, each opportunity comes with its challenges, such as additional research, development, and marketing strategies.

# **HIGH-LEVEL PROJECT PLAN**

To ensure the accuracy, reliability, and effectiveness of an AI-based application for detecting counterfeit sneakers, a well-structured implementation model is required. The CRISP-DM model serves as a guide to ensure all necessary steps are followed, from understanding the business problem to monitoring the application's performance after deployment.

**Phase 1: Business Understanding:** FAKEBLITZ seeks to combat counterfeit products in the sneaker industry by creating an accessible and user-friendly AI-based application that can accurately detect fake sneakers. The application will be available for use on mobile devices and desktops (see Appendix C).

**Phase 2: Data Understanding:** During this stage, FAKEBLITZ will gather images of genuine and counterfeit sneakers, textual information about the sneakers, and customer reviews. The data will be collected from various brand partners, online marketplaces, legitimate sneaker resellers, etc.

**Phase 3: Data Preparation:** Progressively, the data will be cleaned, normalized, pre-processed, scrapped, parsed, and labelled to ensure that it is of high quality and suitable for ML algorithms. It will also be explored to understand its characteristics and limitations.

**Phase 4: Modeling:** Following, the data will be split into training and testing sets to develop and train the AI models using various techniques, such as text analysis, texture recognition, and image recognition (including shape and colour detection). FAKEBLITZ will also use ML algorithms, such as the Naive Bayes classifier and deep learning, to build the models. This will be evaluated to optimize models, ensuring their accuracy and performance.

**Phase 5: Evaluation:** Succeeding, FAKEBLITZ will evaluate the performance of models against various metrics such as F1-score, accuracy, computational complexity, and speed. The confusion matrix and ROC curve will also be utilized to visualize performance. Comparing the performance of AI models, FAKEBLITZ will select the best-performing model(s) for the application and create a production environment to test the solution as a minimum viable product.

**Phase 6: Deployment:** FAKEBLITZ will deploy the AI-based solution on mobile and desktop platforms, integrating the models into the application, along with other features such as user interface, database management, and security. The application will allow consumers to take photos of sneakers, input textual information about the sneakers, and receive instant feedback on the sneakers' authenticity. The application will also provide marketplace access for the direct purchase of authentic sneakers.

**Phase 7: Monitoring:** Lastly,to ensure the solution’s continued performance and success, monitoring is critical. This includes tracking user feedback, the accuracy of the models, and identifying any issues that may arise.

Milestones for the project include completing data collection, developing and testing the AI model, evaluating the AI model performance, and deploying the solution. These milestones are interdependent and may require adjustments to the project plan. If the AI model's performance is unsatisfactory, FAKEBLITZ may need to re-evaluate their data collection and preprocessing methods or adjust the model's hyperparameters. Thus, additional days have been added to the project plan to accommodate unforeseen challenges and changes in requirements (see Appendix D).

### **PROJECT MANAGEMENT & DECISION MAKING**

FAKEBLITZ's Agile project management team includes a Product Owner, Scrum Master, development team, Project Manager, Project Sponsor, Technical Lead, Business Analyst, and team members responsible for communication, quality assurance, and risk management. The specific roles and responsibilities within the project management team will be tailored to Agile’s iterative approach to software development, emphasizing collaboration and adaptation for better product quality and delivery speed.

The process of decision-making and managing the project for FAKEBLITZ will be informed by the Agile methodology. The project management team will work collaboratively to plan, execute, and deliver the project in iterative cycles. They will prioritize continuous feedback and adaptation to ensure the product meets the user's needs. The Product Owner sets the vision and priorities, while the Scrum Master facilitates the team's work. The team will hold daily stand-up meetings to track progress, discuss roadblocks, and identify solutions. Regular retrospectives will be conducted to review their work and make improvements. Effective communication, thorough testing, and risk mitigation will be prioritized by the team to ensure a high quality product is delivered.

The traditional project roles will define FAKEBLITZ's project requirements and objectives, assign tasks, and monitor progress. Regular meetings and communication channels will ensure all team members are informed and issues or risks are addressed promptly. While metrics like velocity and burn-down charts will be used to track progress and adjust the project plan as needed.

# **IMPLEMENTATION & DISSEMINATION**

## **LAUNCH PLAN**

A successful launch plan for FAKEBLITZ would involve the following steps:

**Step 1: Define the target audience:** FAKEBLITZ aims to target sneaker enthusiasts, collectors, and small to medium-sized resellers who value authenticity and seek a reliable solution to detect fake products with accuracy and speed. This tool will enable informed decisions for buying and selling and will also aid resellers and collectors in complying with legal and ethical standards.

**Step 2: Develop marketing materials & social media strategy:** FAKEBLITZ will maximize reach among its target audiences by using social media ads, blog posts, and email campaigns. Marketing materials will feature product descriptions, benefits, and customer testimonials. For instance, a social media ad can highlight FAKEBLITZ's ease of use and accuracy in detecting counterfeit sneakers, along with a call to action to learn more or sign up for a free trial.

**Step 3: Determine the pricing strategy:** A pay-per-use and subscription-based pricing strategy benefit FAKEBLITZ and consumers by offering flexibility and a steady revenue stream (see Appendix E). This model makes it affordable for small businesses and individuals to pay for what they use. Furthermore, the subscription model for the marketplace can increase customer loyalty and retention.

**Step 4: Set up a website**: A website will be leveraged to showcase FAKEBLITZ features and benefits and be utilized as another platform to authenticate sneakers. This website will be optimized for search engines and designed to capture leads.

**Step 5: Launch event:** FAKEBLITZ will be launched at a Sneaker conference where it can be a demo on centre stage.

**Step 6: Follow up with customers:** Ongoing follow-up with customers who have tried the product will address their concerns and ensure satisfaction. Personalized emails will offer additional support and resources.

## **CHANGE MANAGEMENT**

Given that resellers will be the most affected by implementing FAKEBLITZ, FAKEBLITZ is committed to ensuring that the implementation of its AI solution runs smoothly for resellers. However, they recognize that change can be difficult, and therefore have developed a comprehensive change management strategy to support resellers throughout the implementation process.

FAKEBLITZ’s change management strategy aims to achieve the following goals:

1. Ensure that resellers understand the benefits of implementing FAKEBLITZ.
2. Provide resellers with the necessary support and training to facilitate a smooth implementation process.
3. Minimize resistance to change and encourage adoption of the FAKEBLITZ solution.

To achieve these goals, FAKEBLITZ has developed the following steps:

**Step 1: Communication:** The company will communicate the benefits of FAKEBLITZ to resellers via various channels such as email, webinars, and in-person meetings, also emphasizing the importance of implementing the solution and providing clear instructions on how to do so.

**Step 2: Training:** Comprehensive training to resellers will be provided to ensure that they understand how to use FAKEBLITZ. This training will be provided as a short instructional video.

**Step 3: Support:** Resellers will be provided with ongoing support to ensure that they can use FAKEBLITZ without difficulty. This support will include access to a dedicated helpdesk and technical support team, as well as regular check-ins to ensure that the implementation process is running smoothly.

**Step 4: Incentives:** Incentives will be given to resellers to encourage the adoption of FAKEBLITZ, including free trials or other limited-time promotional offers.

**Step 5: Feedback:** The company will regularly seek feedback from resellers to understand any issues or concerns they may have with FAKEBLITZ. This will then be used to make any necessary improvements to the implementation process and to ensure that resellers are satisfied with the solution.

Tools used for this change management strategy include project management software, communication tools, and online feedback surveys. Project management software tracks the progress and ensures timely completion of tasks, communication tools keep stakeholders informed and engaged in the best medium possible, and online feedback surveys gather input on the change management strategy's effectiveness.

## **RESULTS TO IMPACT**

To translate the results of FAKEBLITZ into impact, the company will need to demonstrate the benefits and value of the application to individual consumers, resellers, their employees, partners, and suppliers. This can be achieved through a combination of marketing, communication, and training strategies.

Marketing efforts would focus on highlighting the key features and benefits of FAKEBLITZ to potential consumers. The company will leverage social media platforms, targeted advertising, and promotional events such as Sneaker Con to reach a wider audience and generate interest in the application. The messaging would emphasize how FAKEBLITZ can streamline processes, improve productivity, and enhance collaboration between suppliers and sellers.

Effective communication strategies will be crucial to ensure that consumers and stakeholders understand the value of FAKEBLITZ and are motivated to adopt it. The company will develop clear and concise messaging that outlines the benefits of the application and addresses any potential concerns or objections. This can be communicated through various channels such as email newsletters, webinars, tutorials, and other resources.

Training and education initiatives will be necessary to ensure that consumers and stakeholders have the skills and knowledge required to effectively use FAKEBLITZ. Again, the company will primarily offer tutorial videos to help consumers become proficient with the application. This can also help build trust and confidence among consumers and stakeholders, ultimately leading to increased adoption and usage.

The success of FAKEBLITZ will depend on the company's ability to effectively communicate the value of the application and provide the necessary training and support to ensure successful adoption and usage. By leveraging marketing, communication, and training strategies, FAKEBLITZ can position itself as a valuable tool for consumers and stakeholders, ultimately driving impact.

# **RISK ASSESSMENT**

Risk analysis is an essential component of any project, and FAKEBLITZ is no exception. The following table outlines the major risks, the likelihood and impact of it occurring, and a mitigation plan.

#### **Table C: Risk Mitigation Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Identified Risks** | **Risk Analysis**  **(5: catastrophic, 1: negligible)** | **Risk Mitigation** | |
| **Technical** | | | |
| False positive or false negative results | 5 | * Regular updates to the AI model, training on new data, and improving the accuracy of the detection algorithm | |
| Inaccurate detection due to poor image quality or other external factors | 4 | * Implementing image enhancement algorithms or providing consumers with guidelines on how to capture high-quality images | |
| Malfunctions or breakdowns of software components | 5 | * Regular maintenance and testing of software components, and having a backup system in place | |
| **Data Privacy** | | | |
| Security breaches leading to unauthorized access or data theft | 5 | * Implementing appropriate security measures such as encryption, firewalls, and access controls, and regularly monitoring the system for any vulnerabilities | |
| **Legal** | | | |
| Legal issues or non-compliance with regulatory requirements | 4 | * Regularly reviewing and updating compliance policies and procedures, and consulting with legal experts to ensure compliance with relevant regulations | |
| Infringement of intellectual property rights | 3 | * Conducting a thorough patent search and obtaining necessary licenses or permissions before deployment | |
| **Market** | | |
| Minimal market acceptance due to competition or lack of demand | 4 | * Conduct market research to identify customer needs and preferences and adjust the solution to meet these needs before the official launch | |

Not to mention, it is important to monitor and control risks. This can be accomplished by regularly reviewing and updating the risk management plan, identifying new risks as they arise, and implementing appropriate mitigation strategies. It also involves ongoing monitoring of the solution to identify any potential risks and taking corrective action as necessary.

FAKEBLITZ has the potential to disrupt the sneaker industry and provide significant value to both individual consumers and resellers. However, the success of the product depends on the effective management of the risks identified above. By proactively addressing potential challenges and implementing appropriate risk mitigation strategies, FAKEBLITZ can increase its chances of success and achieve long-term profitability.

# **FUNDING & FINANCING**

Based on the positive Cost-Benefit Analysis and NPV analysis (see Appendix F), FAKEBLITZ anticipates an initial cost of $1.4 millionfor the digital verification application (including MVP and full development). It is in the best interest of FAKEBLITZ to employ a hybrid funding method that sources initial capital from bootstrapping and crowdsourcing, small business grants, as well as venture capitalists.

Bootstrapping (at least 30 percent of initial capital) refers to a self-funding method where company owners use their resources to start a company without or with minimal external investment. This allows the founders of FAKEBLITZ to maintain control over their company and achieve short-term profitability. Furthermore, bootstrapping can be an effective strategy for FAKEBLITZ to reduce barriers to entry and overcome the lack of upfront capital. In this approach, the founders of FAKEBLITZ will leverage personal savings, lean operations, and cash reserves to achieve a notable portion of investments that maintain control of the company (Kenton, 2023).

Crowdfunding is a popular means of raising initial capital for new ventures, including FAKEBLITZ (21 percent of initial capital). The FAKEBLITZ team can create a crowdfunding campaign on various online platforms to solicit donations, contributions, or investments from a large group of individuals or institutions. For FAKEBLITZ, the most appropriate crowdfunding model would be equity crowdfunding, where the backers receive equity or shares in the company in exchange for their investment. The team can leverage social media and other digital marketing tools to promote the campaign and attract potential investors. Moreover, crowdfunding can help FAKEBLITZ to validate the market demand for its solution and generate early adopters, which can provide valuable feedback and insight for product development (Reuben, 2020).

Lastly, FAKEBLITZ can raise initial capital through venture capital by pitching the business idea and demonstrating the potential return on investment to venture capitalists (no more than 49 percent of initial capital). Venture capitalists invest in startups with high growth potential, which aligns with FAKEBLITZ's business goals. The company can identify potential venture capital firms through industry networks, online directories, or startup incubators. They will not only provide private equity capital but also access to managerial and or technological expertise (Huang, 2018).

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# **APPENDICES**

**Appendix A: FAKEBLITZ Key Performance Indicators**

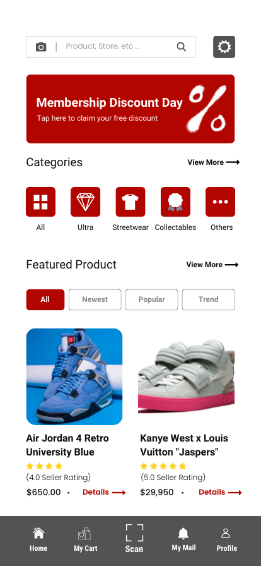
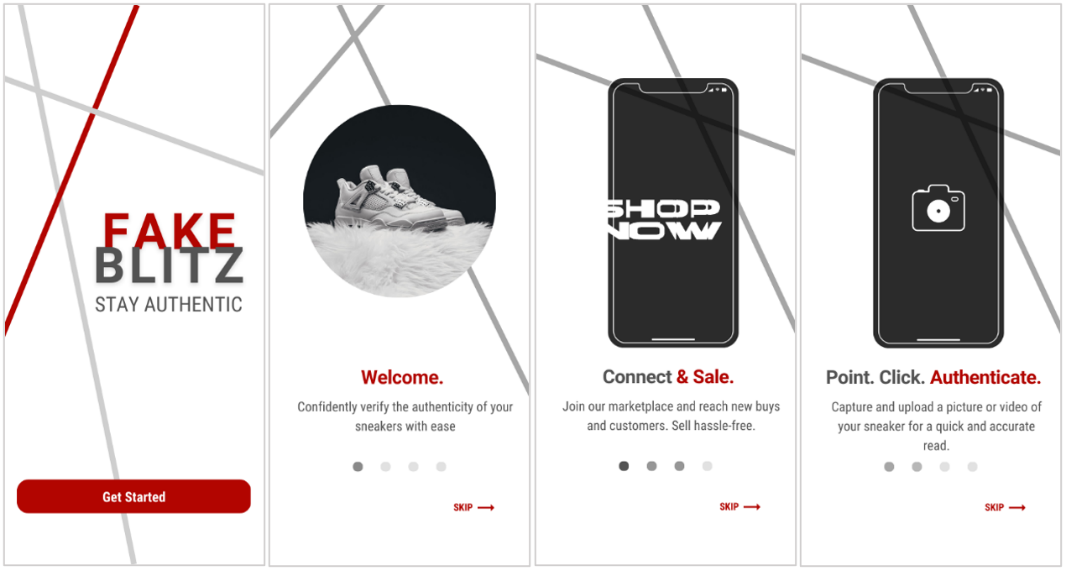
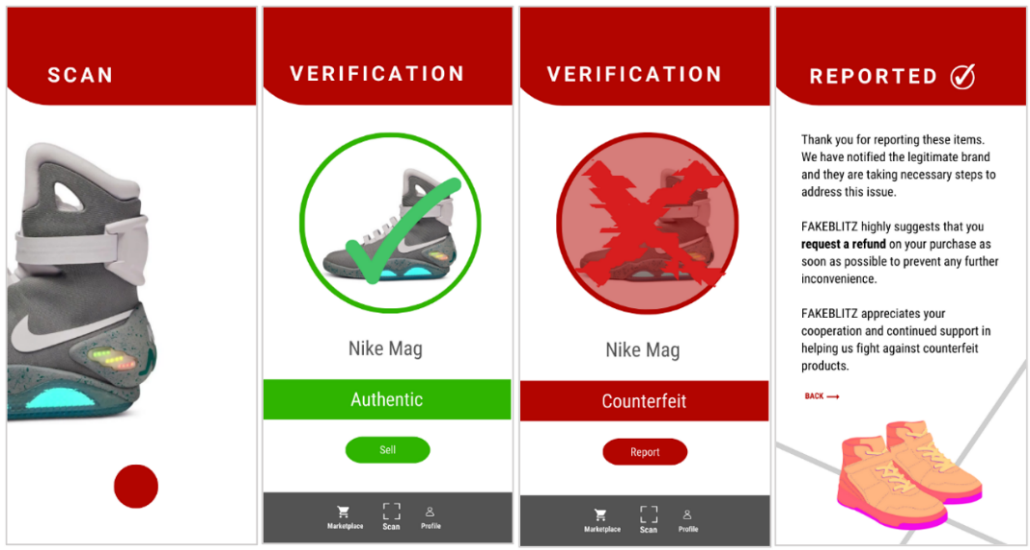
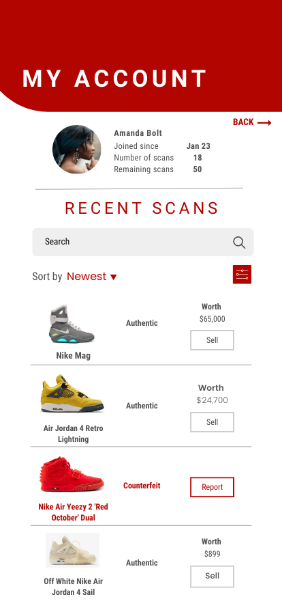
|  |  |
| --- | --- |
| **KPI** | **Purpose** |
| **F1 Score** | * A useful metric for evaluating the overall performance of a machine-learning model * Combines precision and recall into a single metric, providing an overall measure of the model's performance * Balances the trade-off between precision and recall, providing a useful overall measure of the model's performance * A high F1 score indicates that the AI solution is effective at identifying counterfeit sneakers using multiple methods |
| **Accuracy** | * Accuracy measures the overall correctness of the solution by calculating the percentage of correctly identified sneakers, authentic and counterfeit, out of all the sneakers in the dataset * This metric is crucial as it measures the solution's overall performance, irrespective of the specific techniques employed * A high accuracy rate indicates that the AI solution is effective in identifying both authentic and counterfeit sneakers |
| **ROC Curve** | * The plot of the true positive rate (TPR) against the false positive rate (FPR) at various classification thresholds values * Used to evaluate the performance of a solution that uses multiple methods by plotting the ROC curve separately for each method and then comparing them |
| **Confusion Matrix** | * Summarizes the performance of a solution by showing the number of true positives, false positives, true negatives, and false negatives for each method (complements the ROC Curve) |
| **Computational Complexity** | * Measures the number of resources required to run the solution, such as memory, processing power, and time * Important when using deep learning methods * Optimizing can improve the overall performance of the solution and reduce the cost of running it |
| **Speed** | * Measures the time it takes for the solution to identify and verify the authenticity of sneakers * A faster solution can also enable more transactions to be processed in a shorter period, which can lead to increased revenue |
| **Cost Savings (business-related)** | * In terms of the reduction in costs associated with identifying and verifying counterfeit sneakers by resellers |
| **User Satisfaction (business-related)** | * Measured through customer feedback, ratings, and reviews * If customers are satisfied with the authenticity verification process, they are more likely to trust the seller and return for future purchases |

Diagram

Description automatically generated**Appendix B: FAKEBLITZ Architecture Diagram**

1. Data from brand partners and online data sources will be extracted which includes various types of structured and unstructured data such as images, text, and videos. The data will then be transformed to ensure consistency and uniformity across the different sources. This step will include data cleaning, data normalization, and data standardization. Once the data is transformed, it will then be loaded into a data integration repository, which is a storage system designed to handle large volumes of data from various sources. The data integration repository will integrate data from various sources into a cohesive dataset. It is equipped with features such as data indexing and search capabilities to allow for easy access and retrieval of data.
2. After the data is integrated into the data integration repository, it flows into an event stream where the data is processed in real-time. The event stream also includes AI/ML capabilities, which help in making predictions, detecting anomalies, and identifying patterns.
3. From the event stream, the data flows into a data storage system in Google Cloud, where it is stored in a structured format that enables efficient data retrieval and querying. The data storage system also includes built-in security features that ensure the privacy and integrity of the data. By leveraging these technologies, FAKEBLITZ can rapidly process and analyze large amounts of data and provide actionable insights to its users. From here the processed data gets redistributed to their respective APIs.
4. Images or videos produced or uploaded by consumers are sent to a server, which triggers a direct integration and a feature extraction process to enhance the picture taken by the customer and is integrated and compared with the API historical data. There will be a trigger to guide the customers to take a clear picture, to avoid issues/confusion while the AI/ML processes the images.
5. The compared data are transferred to the data storage (Google Cloud) where the images or videos are processed to extract relevant data. Then, the data is fed into the event stream, which can perform AI/ML capabilities such as image recognition and classification.
6. The output of these capabilities is then sent back to the application's front end, where it is visualized to the user. Based on the results of the classification, the sneaker is labelled as either authentic or counterfeit. The entire process is designed to be seamless and user-friendly, providing consumers with quick and accurate results to help them make informed decisions about their sneaker purchases.

**Appendix C: Solution Demo**  
**MOBILE APPLICATION**



**DESKTOP**

**A picture containing text

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**Diagram

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**Diagram, timeline

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**Appendix D: Project Calendar**

|  |  |  |
| --- | --- | --- |
| **Task** | **Assigned To** | **Timeframe** |
| **Business Understanding (January - February 2024)** | | |
| **Conduct a project kick-off meeting** | Project Manager, Technical Lead, Business Analyst, Data Analyst | January 2, 2024 |
| **Define the project scope and objectives** | Project Manager, Business Analyst | January 7 - 10, 2024 |
| **Identify key stakeholders and their roles** | Project Manager, Business Analyst | January 10 - 15, 2024 |
| **Conduct a feasibility study** | Technical Lead, Business Analyst | January 15 - 31, 2024 |
| **Develop a project plan** | Project Manager | February 1 - 10, 2024 |
| **Obtain project approval from stakeholders  (or make revisions for approval)** | Project Manager, Business Analyst | February 10 - 14, 2024 |
| **Data Understanding (February - April 2024)** | | |
| **« Gather and review available data** | Data Analyst | February 15 - March 1, 2024 |
| **Identify data quality issues and remediate them** | Data Analyst | March 1 - 15, 2024 |
| **Conduct exploratory data analysis** | Data Analyst | March 15 - 30, 2024 |
| **Verify data completeness** | Data Analyst | March 10 - April 9, 2024 |
| **Document data findings** | Data Analyst | April 10 - 15, 2024 |
| **Data Preparation (April - June 2024)** | | |
| **Develop a data preparation plan** | Data Analyst, Technical Lead | April 15 - 30, 2024 |
| **Create data processing pipelines** | Data Analyst, Technical Lead | May 1 - 14, 2024 |
| **Transform and clean data** | Data Analyst | May 15 - 30, 2024 |
| **Select appropriate data sampling methods** | Data Analyst | May 30 - June 10, 2024 |
| **Document data preparation process** | Data Analyst | June 10 - 14, 2024 |
| **Modelling (June - August 2024)** | | |
| **« Develop a modelling plan** | Data Analyst, Technical Lead | June 15 – 30, 2024 |
| **Select modelling techniques** | Data Analyst, Technical Lead | July 1 - 15, 2024 |
| **Build and train models** | Data Analyst, Technical Lead | July 15 - 30, 2024 |
| **« Evaluate model performance** | Data Analyst, Technical Lead | August 1 - 9, 2024 |
| **Document modelling process and findings** | Data Analyst, Technical Lead | August 12 - 16, 2024 |
| **Evaluation (August - December 2024)** | | |
| **Evaluate model performance against project objectives** | Data Analyst, Technical Lead, Project Manager | August 19 - November 16, 2024 |
| **Fine-tune model based on evaluation results** | Data Analyst, Technical Lead, Project Manager | November 19 - December 19, 2024 |
| **Deployment (December 2024 - January 2025)** | | |
| **Integrate the selected model into the FAKEBLITZ application** | Technical Lead | December 19 - 30, 2024 |
| **« Deploy** | Technical Lead, Project Manager, Business Analyst | January 2, 2025 |
| **Monitoring and iterations** | Technical Lead, Project Manager, Business Analyst | January 2, 2025 - Ongoing |

**Appendix E: Estimated Revenue Subscription for Option 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Optimistic** | | **Most Likely** | | **Pessimistic** | |
| **Sneaker Enthusiasts** | **Sneaker Resellers** | **Sneaker Enthusiasts** | **Sneaker Resellers** | **Sneaker Enthusiasts** | **Sneaker Resellers** |
| **Cost of Development** | $1,327,054.71 | $26,541.09 | $1,330,533.22 | $23,062.58 | $1,348,202.99 | $5,392.81 |
| **Profit Margin** | 60% | 70% | 55% | 65% | 50% | 60% |
| **Est. Subscribers** | 25,000 | 500 | 15,000 | 260 | 5,000 | 20 |
| **Annual Cost Per User** | $53.08 | $53.08 | $88.70 | $88.70 | $269.64 | $269.64 |
| **Annual Price** | $84.93 | $90.24 | $137.49 | $146.36 | $404.46 | $431.42 |
| **Monthly Price Per User** | $8.00 | $8.00 | $12.00 | $13.00 | $34.00 | $36.00 |
| **Annual Revenue** | $2,123,287.53 | $45,119.86 | $2,062,326.50 | $38,053.25 | $2,022,304.48 | $8,628.50 |
| **PAY-PER-USE** | | | | | | |
| **Photo Verification Price** | $3.20 | $3.20 | $4.80 | $5.20 | $13.60 | $14.40 |
| **Video Verification Price** | $4.80 | $4.80 | $7.20 | $7.80 | $20.40 | $21.60 |
| **SUBSCRIPTION** | | | | | | |
| **Monthly Marketplace Access** | $12.00 | $45.00 | $10.00 | $35.00 | $8.00 | $30.00 |
|  | | | | | | |
| **Number of Monthly Scans** | 50,000 | 5,000 | 30,000 | 2,600 | 10,000 | 200 |
| **Monthly Photo Revenue** | $160,000.00 | $16,000.00 | $144,000.00 | $13,520.00 | $136,000.00 | $2,880.00 |
| **Monthly Video Revenue** | $240,000.00 | $24,000.00 | $216,000.00 | $20,280.00 | $204,000.00 | $4,320.00 |
| **Monthly Marketplace Revenue** | $600,000.00 | $225,000.00 | $300,000.00 | $91,000.00 | $80,000.00 | $6,000.00 |
| **Total Monthly Revenue** | $1,000,000.00 | $265,000.00 | $660,000.00 | $124,800.00 | $420,000.00 | $13,200.00 |
| ***Sum*** | | $1,265,000.00 |  | $784,800.00 |  | $433,200.00 |
| **Real Est. of Monthly Revenue (40%)** | | $506,000.00 |  | $313,920.00 |  | $173,280.00 |
| **Annual Real Est. of Revenue** | | **$6,072,000.00** |  | **$3,767,040.00** |  | **$2,079,360.00** |

**Appendix E: Estimated Revenue Subscription for Option 2**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Optimistic** | **Most Likely** | **Pessimistic** |
| **Partners & Sneaker Resellers** | **Partners & Sneaker Resellers** | **Partners & Sneaker Resellers** |
| **Cost of Development** | $1,335,911.00 | $1,335,911.00 | $1,335,911.00 |
| **Profit Margin** | 60% | 55% | 50% |
| **Est. Subscribers** | 2000 | 1,100 | 200 |
| **Annual Cost Per User** | $667.96 | $1,214.46 | $6,679.56 |
| **Annual Price** | $1,068.73 | $1,882.42 | 10,019.33 |
| **Monthly Price Per User** | $90.00 | $157.00 | $835.00 |
|  | | | |
| **Annual Revenue** | **$2,137,457.60** | **$2,070,662.05** | **$2,003,866.50** |

To address different revenue generation scenarios, FAKEBLITZ uses an approach that considers optimistic, pessimistic, and most likely revenue scenarios. In the optimistic scenario, the company focuses on acquiring a large volume of subscribers and consumers to build brand awareness and market share. In the pessimistic scenario, the company minimizes expenses and identifies alternative revenue streams. In the most likely scenario, the company balances growth and profitability, using data analytics and customer feedback to optimize pricing and features.

FAKEBLITZ will employ various marketing strategies including influencer marketing, content marketing, and targeted advertising campaigns to attract and retain customers, aiming to achieve optimal revenue scenarios. Additionally, the company will make data-driven decisions to adjust its revenue model and pricing strategies while monitoring revenue streams. A comprehensive revenue generation strategy for different scenarios will help FAKEBLITZ manage risk and achieve long-term success.

**Appendix F: Estimated Cost-Benefit Analysis & NPV**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Annual** | | **Notes** |
| **DIRECT COST** | **Option 1** | **Option 2** |
| ***Data Acquisition & Preparation*** |  |  |  |
| Brand Partnerships | $180,000.00 | $180,000.00 |  |
| GitHub | $252.00 | $252.00 |  |
| ***Development Teams Salaries & Benefits*** |  |  |  |
| Mobile App Developer | $101,010.00 | $101,010.00 |  |
| Software / Web Developer | $65,370.00 |  | Option 2 does not require a website  Since FAKEBLITZ is a start-up, these roles will be combined to save on cost |
| UX/UI Designer | $100,000.00 | $100,000.00 |  |
| ML Engineer | $138,607.00 | $138,607.00 |  |
| Quality Assurance (QA) Engineer | $57,954.00 | $57,954.00 |  |
| Marketing Specialist | $63,180.00 | $63,180.00 |  |
| Product Owner & Scrum Master | $125,639.00 | $125,639.00 | Since FAKEBLITZ is a start-up, these roles will be combined to save on cost |
| Technical Lead | $125,675.00 | $125,675.00 |  |
| Project Manager | $125,777.00 | $125,777.00 |  |
| Business Analyst | $130,617.00 | $130,617.00 |  |
| Risk Manager | $131,200.00 | $131,200.00 |  |
| ***Infrastructure & Tools*** |  |  |  |
| Google Cloud Platform | $6,000.00 | $6,000.00 |  |
| High-performance computing (HPC) system | $10,000.00 | $10,000.00 |  |
| Website Ownership | $480.00 |  | Option 2 does not require a website |
| Hologram stickers and labels and shipping |  | $30,000.00 |  |
| ***Testing & Evaluation*** | $5,000.00 | $10,000.00 | Cost more to test option 2 as it will involve shipping |
| **SUBTOTAL** | **$1,366,761.00** | **$1,335,911.00** |  |
| **INDIRECT COST** |  |  |  |
| Marketing and advertising | $50,000.00 | $50,000.00 |  |
| The opportunity cost of other option | $1,012,876.05 | $2,793,009.00 |  |
| Training cost | $13,750.00 | $12,500.00 |  |
| Infrastructure upgrades (future integrations) | $10,000.00 | $10,000.00 |  |
| Legal and regulatory compliance | $10,000.00 | $10,000.00 |  |
| Maintenance and updates | $10,000.00 | $5,000.00 | Less maintenance is required for option 2 as there is only one platform to consider |
| **TOTAL COST** | **$2,473,387.05** | **$2,880,509.00** |  |
| **BENEFITS** |  |  |  |
| Subscription revenue | $5,187,840.00 | $2,206,287.05 |  |
| Improved reputation and brand recognition | $150,000.00 | $150,000.00 |  |
| New partnerships and collaborations | $180,000.00 | $180,000.00 |  |
| **TOTAL BENEFITS** | **$5,517,840.00** | **$2,536,287.05** |  |
|  |  |  |  |
| **CBA** | **$3,044,452.95** | **-$344,221.95** |  |
| **Payback period (months)** | 5.38 | 13.63 |  |
| **Benefit-Cost ratio** | 2.23 | 0.88 |  |
|  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | **NPV Analysis: Option 1** | | | **NPV Analysis: Option 2** | | |
| **WACC**  7% | **Year** | **Outflow** | | **Inflow** | **PV Formula\*** | **Outflow** | **Inflow** | **PV Formula\*** |
| 2024 | 0 | -$2,473,387.05 | |  | -$2,473,387.05 | -$2,880,509.00 |  | -$2,880,509.00 |
| 2025 | 1 |  | | $5,187,840.00 | $4,848,448.60 |  | $2,206,287.05 | $2,061,950.51 |
| 2026 | 2 |  | | $11,413,248.00 | $9,968,772.82 |  | $4,853,831.51 | $4,239,524.42 |
| 2027 | 3 |  | | $20,886,243.84 | $17,049,396.50 |  | $8,882,511.66 | $7,250,775.41 |
| 2028 | 4 |  | | $33,417,990.14 | $25,494,424.68 |  | $14,212,018.66 | $10,842,280.99 |
| 2029 | 5 |  | | $46,785,186.20 | $33,357,191.17 |  | $19,896,826.13 | $14,186,162.04 |
| 2030 | 6 |  | | $65,499,260.68 | $43,644,923.02 |  | $27,855,556.58 | $18,561,333.51 |
| 2031 | 7 |  | | $91,698,964.96 | $57,105,506.76 |  | $38,997,779.21 | $24,285,856.93 |
| 2032 | 8 |  | | $128,378,550.94 | $74,717,485.48 |  | $54,596,890.89 | $31,775,887.58 |
| 2033 | 9 |  | | $179,729,971.31 | $97,761,195.95 |  | $76,435,647.24 | $41,575,927.67 |
| 2034 | 10 |  | | $251,621,959.84 | $127,911,845.17 |  | $107,009,906.14 | $54,398,410.04 |
| **Sum PV** | | | | | **$489,385,803.09** |  | | **$206,297,600.12** |
| *\*Note: The average start-up company anticipates revenue growth of 120% in the first year, 83% in the second year, and 60% in the third year* (Shah, 2021). *Thereafter, FAKEBLITZ anticipates a 40% annual growth in revenue.* | | | | | | | | |

Counterfeiting has significant economic and social consequences globally, and many companies are seeking innovative solutions to mitigate it using artificial intelligence. FAKEBLITZ’s desire to provide a competitive solution that can be used on various platforms, by both resellers and individual consumers, and requires minimal to no hardware has led to two potential solutions: a digital verification application or a hologram labelling system.

The digital verification application involves scanning or uploading images or videos of a sneaker and receiving near real-time authentication, which provides consumers with immediate counterfeiting reporting capabilities and access to an in-app marketplace to buy and sell authentic sneakers. Conversely, the hologram labelling system functions as a security measure that provides a unique and difficult-to-duplicate visual element that includes an exclusive code or serial number, that can be tracked and verified through an AI-based mobile application.

Leveraging Cost-Benefit Analysis (CBA) and NPV analysis to evaluate project options, FAKEBLITZ can gain a comprehensive understanding of the financial implications of each option. Based on the evaluation seen above, the digital verification application is the company’s optimal solution with a CBA of $3.04 million and a 10-year NPV of $489.4 million.