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Brand value degradation due to counterfeits

Master's thesis in Management and Economics of Innovation

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SUMMARY

Counterfeiting is a widespread issue for companies, leading to financial losses and a decline in consumer trust. As a result, brand protection programs become important. However, measuring the impact of these programs remains a challenge. This is especially true when looking into how counterfeiting affects brand value degradation. Therefore, this thesis aims to develop an equation to estimate brand value degradation due to counterfeiting and assess the return on investment for brand protection programs. To gain insights into measuring brand protection effectiveness, an iterative method inspired by grounded theory was employed. Three data sources were utilized, internal documents from a counterfeit takedown provider, a narrative literature review, and semi structured interviews.

This thesis identifies key variables that influence brand value degradation caused by counterfeiting. These variables include, the number of unique customers buying counterfeits, the percentage of deceived and unsatisfied customers, exposures required for attitude change, information diffusion, customer acquisition cost, and the cost of brand protection programs. The identified variables are then incorporated into equations that calculate brand value degradation due to counterfeits, total costs due to counterfeits, and the return on investment of brand protection programs.

This approach offers an advantage by shifting the focus from the complexities of measuring brand value to estimating the costs associated with customer losses due to counterfeiters deceiving customers. By leveraging the developed equations, firms can gain valuable insights into the brand value degradation caused by counterfeiting. This information can be used to empower brand professionals to effectively report these losses to management, enabling informed decision making. Future research should focus on evaluating specific brand protection activities, quantifying the impact of individual variables, and exploring additional factors influencing brand value degradation.

Keywords: Counterfeiting, Brand value degradation, Brand protection programs, Return on investment

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1. Introduction

Counterfeiting poses a significant threat to the global economy, with estimates suggesting a staggering \$464 billion in trade value lost to counterfeits in 2019 (Shepherd et al., 2023). This economic harm extends beyond lost profits for affected businesses. Counterfeiting is linked to criminal activity, with connections to drug trafficking, human trafficking, and money laundering (EUIPO & Europol, 2017). Furthermore, counterfeiting discourages investment in research and development, hindering long-term economic growth and innovation (EUIPO & Europol, 2017; OECD & EUIPO, 2023).

The expansion of e-commerce platforms has been linked to a significant increase in counterfeit goods (Shepherd et al., 2023). This trend is likely to continue with the projected growth of both B2B and B2C e-commerce segments. With a compounded annual growth rate of 14.5% and 14.4% respectively (International Trade Administration, 2021), this growth will likely be accompanied by a rise in counterfeiting activities. The ease of setting up online stores and the anonymity of the digital landscape make it difficult for platforms to effectively prevent counterfeiting. A recent study highlights this concern, revealing that only a small fraction of online marketplaces have a coherent strategy to combat counterfeiting (Shepherd et al., 2023). Moreover, counterfeiting is not limited to physical products. The US Federal Trade Commission reports a surge in impersonation scams, where trademarks are fraudulently used to advertise undelivered services, resulting in significant consumer losses (Federal Trade Commission, 2023). The damage from counterfeiting extends beyond immediate financial losses, weakening brands and undermining consumer trust.

Considering the potential harm counterfeiting activities can impose on a firm and how widespread the issue is, it is no surprise that companies invest in brand protection programs. However, a key challenge many of these brand protection programs face is how to measure the anti-counterfeiting efforts accurately (Wilson, 2022; Fuchs & Zhou, 2010). There is an inherent problem measuring and collecting data regarding counterfeiting since it is a criminal activity (Wilson, 2022). Therefore, it is even harder to measure the outcome of the anti-counterfeiting efforts since they depend on accurate counterfeiting measurements. Without relevant metrics brand protection professionals struggle to inform management and secure sufficient resource allocation (Wilson, 2022).

The current practice of using brand value as a metric for estimating brand value degradation presents a significant challenge (Fuchs & Zhou, 2010). Calculating brand value is notoriously complex and lacks a universally accepted method (Deméré et al., 2022). This necessitates the development of alternative approaches that do not rely solely on brand value and can incorporate intangible variables often excluded from traditional return on investment calculations (Wilson & Grammich, 2020). This is further supported by interviewee 1 which stated that brand professionals attending industry

conferences expressed significant interest in new brand protection metrics estimating brand value degradation. Given the lack of established methods for measuring brand value degradation from counterfeiting, a topic that has garnered significant interest among brand professionals, this thesis intends to provide the necessary tools to address this crucial issue.

1.1 Aim

To develop an approach that estimates a conservative level of brand value degradation caused by counterfeiting. This approach will empower brand professionals to effectively report these losses to management.

1.2 Limitations

This thesis has focused on assessing the whole brand protection program, not individual activities within the program. Furthermore, focus has been on identifying important factors affecting the return on investment of the brand protecting program, not quantifying the importance of each variable.

One part of the goal with this thesis is to help brand professionals report losses due to counterfeiting. However, focus will be on providing them an equation for this, not how these results will be presented to management.

Moreover, this thesis aims to provide an equation for calculating the return on investment of the brand protection program. Although, it will not include calculating the return on investment of the brand protection program on individual product level.

1.3 Research questions

RQ1: How to calculate brand value degradation due to counterfeiting?

RQ2: How to calculate the return on investment of a brand protection program?

2. Theory

A narrative literature review was conducted to explore the theory on how counterfeits degrade brand value and how to effectively measure brand protection programs. This is part of the data collection process, which together with the interviews and internal documents forms the basis for identifying variables for the equations.

2.1 Characteristics for a product counterfeit

As discussed earlier, globalization has created a more favorable environment for counterfeiters (Sullivan et al., 2017). It allows them to expand beyond luxury goods by leveraging low-cost manufacturing countries with potentially weaker law enforcement and counterfeiting laws (Sullivan et al., 2017). Additionally, globalization has increased supply chain complexity, making it harder for brand owners to track products throughout the transportation network, thus increasing vulnerability to counterfeiting (Sullivan et al., 2017). This risk is particularly high in regions with a high rate of organized crime, where counterfeiting networks can benefit from protection from these criminal groups (Reynolds, 2011).

Another aspect that affects the risk for counterfeiters is how the distribution network is designed. The presence of informal distribution channels increases the risk of counterfeits since the control mechanisms are decreased (Reynolds, 2011). Distribution centers could also use counterfeits to mix with originals in order to decrease their cost while keeping the revenues (Sullivan et al., 2017). Another vulnerability lies in the handling of secondary goods or returned merchandise. Counterfeiters can exploit these channels by refurbishing these used products and selling them as originals. (Sullivan et al., 2017).

The degree of societal and government acceptance of counterfeiting significantly impacts its prevalence. Some authorities might be swayed by the short-term economic benefits of counterfeiting, such as increased local employment (Sullivan et al., 2017). This aligns with the established connection between corruption and counterfeiting (Reynolds, 2011; Shelley, 2012). Weak enforcement due to corruption can create an environment where counterfeiting flourishes, not just through easier import and export but also through reduced risk of detection and prosecution.

While counterfeiting is present in most markets, some key characteristics distinguish common counterfeit markets. A common misconception is that counterfeits primarily target luxury goods due to their high price point (Reynolds, 2011). However, though luxury goods still can be a significant target (Sullivan et al., 2017), a more accurate indicator of a counterfeit market is the gap between disposable income and the price of goods (Reynolds, 2011; Shelley, 2012). In markets where there is a significant difference between these two factors, the demand for cheaper alternatives, including counterfeits, is likely to be higher.

2.2 Consumer reasonings behind buying counterfeits

When discussing reasons for consumers to buy counterfeited goods, the underlying causes can vary greatly. Some customers unknowingly purchase counterfeits, while others suspect but choose to ignore the issue, and some knowingly contribute to criminal activity (Eisend, 2016). On the other hand, some consumers do not view counterfeiting negatively and do not see the purchasing of counterfeits as a problem (Eisend, 2016; EUIPO, 2020). Therefore, the perception of counterfeiting significantly influences consumer behavior. If society condones buying counterfeits, it is more likely that consumers will purchase them (Basu et al., 2015).

When it comes to luxury goods, consumers often buy counterfeits because they cannot afford the original brand but still want the status of the product (Sullivan et al., 2017; EUIPO, 2020). Price in general is also shown to be the biggest motivator for buying counterfeits (EUIPO, 2023; Alhabash et al., 2023). Regarding buying a product you cannot afford, there are two reasons for that, both internal and external forces (Basu et al., 2015). The internal factor is personal gratification, by buying a counterfeit, you could get something similar to what you want while not having to spend a significant amount of money (Sullivan et al., 2017; Basu et al., 2015). The external factor, which according to Basu et al. (2015) has the biggest influence on buying counterfeit goods, is the desire to belong to a social group and that could be achieved by buying goods that seem to be originals but are counterfeits. Another reason consumers might buy counterfeits is if the counterfeit provides the same basic function as the original. In these cases, the consumer does not gain any extra utility, even though the original brand delivers superior durability or higher quality (Basu et al., 2015).

Furthermore, when choosing between different options for a product, potential customers consider various attributes. These attributes can be divided into two categories. The first category, search attributes, are features a customer can evaluate before buying, such as the size, color weight etc. (Goldfarb & Moorthy, 2009). The other category is experience attributes, which can't be evaluated before purchase, like the comfort of a pair of shoes or the quality of a restaurant meal (Goldfarb & Moorthy, 2009). These categories directly correspond to search goods and experience goods. Search attributes are those of search goods, while experience attributes are associated with experience goods (Goldfarb & Moorthy, 2009). According to Smith and Park (1992), the brand has a bigger impact for experience goods than for search goods because experience goods' quality cannot be fully assessed before purchase, so a brand's reputation becomes a key factor in influencing consumer choice.

Studies from the European Union Intellectual Property Office show an increase in people admitting to buying counterfeits, from 5% in 2020 to 13% in 2023 (EUIPO, 2020; 2023). At the same time, the number of people who accidentally bought a counterfeit due to being deceived also rose, from 9% in 2020 to 15% in 2023 (EUIPO, 2020; 2023). A study in ASEAN countries, where counterfeited goods are more prevalent, found that 50% of customers accidentally purchased counterfeits (Shepherd et al., 2023). Another study by Michigan State

University showed that 68% of surveyed customers accidentally bought at least one counterfeit during the last year (Alhabash et al., 2023). These studies also highlight the significant role that demographics play, with younger participants being more likely to purchase counterfeits and online shopping positively predict counterfeit purchases.

2.3 Effects of litigations and protecting brands in court

Defending your brand in court against counterfeiters is often a costly and time-consuming process, but nonetheless an integral part of any successful brand protection program (Ertekin et al., 2018; Wilson, 2022). Litigation can increase the perceived risk for counterfeiters, in turn contributing to a lower risk of your brand being counterfeited (Kennedy, 2016; Reynolds, 2011). Although Ertekin et al. (2018) found that investor sentiment and stock returns might decrease in the short term after a trademark infringement lawsuit is filed, they tend to recover and even become positive in the long term. This can be attributed to the mixed signals the lawsuit sends. Investors see the brand's willingness to fight for its rights, which is positive. However, the lawsuit also highlights the existence of a counterfeiting problem, which can be concerning. (Ertekin et al., 2018). Winning a trademark litigation case can also have a short-term dip in stock price as investors recognize the confirmed threat of counterfeiting (Ertekin et al., 2018). However, in the long term, it is seen as positive because it secures a strong legal position for the brand, potentially deterring future counterfeiting and protecting its value (Ertekin et al., 2018).

The effectiveness of litigation against counterfeiting can vary significantly between nations due to differences in laws protecting intellectual property. This is particularly important considering the majority of counterfeits originate from China and Hong Kong (Shepherd et al., 2023; Huang et al., 2023). Additionally, China's approach to holding e-commerce platforms accountable for not preventing trademark infringement creates a more favorable environment for litigation (Follador, 2017).

2.4 Cost of quality and counterfeiting framework

The concept of cost of quality (COQ) was introduced in the 1950s by Joseph Juran to raise awareness of the financial impact of quality (Schiffauerova & Thomson, 2006). It encompasses the costs associated with both achieving and maintaining quality, as well as the costs incurred due to poor quality (Gupta and Campbell, 1995). COQ can be divided into two main categories, conformance costs and non-conformance costs (also known as control costs and failure costs) (Gupta and Campbell, 1995; Schiffauerova & Thomson, 2006). Conformance costs are further broken down into prevention costs (activities to prevent defects) and appraisal costs (activities to ensure quality). Non-conformance costs are divided into internal failure costs (defects identified before reaching the customer) and external failure costs (defects identified by the customer) (Albright and Roth, 1992).

The overall goal of COQ is to minimize the total cost across these four categories (Gupta and Campbell, 1995; Schiffauerova & Thomson, 2006).

Importantly, these costs can influence each other. For example, investing in prevention (e.g., training, quality control) can lead to fewer defects (lower failure costs) (Gupta and Campbell, 1995). Generally, spending on prevention is considered more cost-effective in the long run compared to addressing failures after they occur (Gupta and Campbell, 1995; Demeré, 2022).

Demeré et al. (2022) propose a shift in focus due to the difficulty of calculating the return on investment for anti-counterfeiting activities. They suggest minimizing total costs using the COQ framework. Within this framework, anti-counterfeiting efforts (such as brand protection measures) can be considered conformance costs, as they aim to prevent counterfeiting (Demeré et al., 2022). Conversely, the actual costs incurred due to counterfeiting (lost sales, brand damage) can be seen as non-conformance costs. Similar to the core principle of COQ, investing in anti-counterfeiting activities (prevention) is generally more effective than dealing with the consequences of counterfeiting (failures) (Demeré et al., 2022). However, there's a diminishing return on focusing solely on prevention as the effectiveness might decrease at some point (Demeré et al., 2022).

This COQ-based approach offers several advantages for firms. First, it emphasizes preventive measures and a proactive approach to fighting counterfeiting (Demeré et al., 2022). Second, it encourages using performance metrics and data analysis to identify and mitigate risks (Demeré et al., 2022). Finally, the feedback loop inherent in the COQ framework promotes continuous learning and improvement of anti-counterfeiting efforts (Demeré et al., 2022).

However, applying the cost of quality framework to counterfeiting costs has some key differences. One difference is controllability. Unlike quality costs, which a company can directly influence through its processes, counterfeiting costs are less controllable (Demeré et al., 2022). For example, a company can improve its production process to reduce defects (quality cost), but it can't directly control the actions of counterfeiters. Another difference is the complexity. Counterfeiting costs involve not just the firm itself, but also the actions of counterfeiters. This makes it more difficult to predict the effectiveness of measures taken to mitigate counterfeiting risks (Demeré et al., 2022).

2.5 Popular anti-counterfeiting tactics

Many tactics exist to combat product counterfeiting, but most tend to be reactive rather than proactive (Wilson & Kinghorn, 2016). Traditionally, companies have relied on enforcement-driven approaches, which often involve partnering with customs and law enforcement agencies to identify and seize counterfeit goods (Wilson et al., 2016). This reactive approach focuses on handling individual cases after they occur, offering limited long-term mitigation of the counterfeiting problem (Wilson & Kinghorn, 2016; Reynolds, 2011). Seizure-only tactics can be resource-intensive and yield poor return on investment in the long run (Reynolds, 2011). However, seizures can still be a valuable part of a larger brand protection program, especially when targeting the early stages of the

counterfeiting supply chain to disrupt operations and maximize impact (Reynolds, 2011).

Viewing counterfeiters as competitors and analyzing their strengths and weaknesses can be a valuable strategy (Reynolds, 2011; Wilson, 2022). By increasing the risks associated with counterfeiting their products (e.g., higher risk of getting caught), companies can make counterfeiting a less attractive proposition and encourage counterfeiters to target other areas.

Several initiatives can improve anti-counterfeiting efforts, including partnerships with law enforcement and industry stakeholders, information sharing, and consumer education (Wilson & Kinghorn, 2016). These tactics align with the concept of increasing perceived risk for counterfeiters (Reynolds, 2011). By understanding counterfeiting operations and taking proactive steps to make them more difficult, firms can effectively deter counterfeiters (Kennedy, 2016; Reynolds, 2011). However, justifying investments to management in proactive anti-counterfeiting measures can be challenging due to the difficulty of forecasting and measuring their success (Reynolds, 2011).

Furthermore, it is important to involve several functions of the firm in the brand protection work since counterfeiting is an interdisciplinary problem (Kennedy, 2016; Wilson and Kinghorn, 2016). Departments that should be incorporated are for example market monitoring, which should screen the market for possible counterfeits and human resources which should do background checks to employees to minimize leakage of information (Wilson and Kinghorn, 2016). Another proactive strategy involves minimizing vulnerabilities within the supply chain (Wilson et al., 2016). This can be achieved through the collaboration of various departments, as mentioned earlier. Track and trace technology is a valuable tool for identifying and addressing weaknesses in the supply chain (Wilson et al., 2016). This technology allows for real-time monitoring of products throughout the manufacturing and distribution process, helping to identify potential points of diversion for counterfeiters.

2.6 Justifying and measuring brand protection programs

As established in the background, counterfeiting is a widespread multifaceted problem, illegally generating billions of dollars in revenue every year. Recuperating some of this revenue in terms of lost sales is the most obvious motive why firms need brand protection programs. Counterfeiting also undermines the value of trademarks and increases the risk of brand value degradation (Wilson & Grammich, 2020). Furthermore, firms may incur costs such as warranty, liability and legal costs due to counterfeits (Wilson, 2022). Since counterfeits are increasingly widespread, unaware customers face a significant risk in terms of both health and safety when purchasing counterfeited products (Shelley, 2012; Wilson and Kinghorn, 2015; Kennedy et al., 2017). Business and other institutions can also be negatively affected by unknowingly purchasing counterfeits, including military contractors resulting in national security risks (Sullivan et al., 2017).

Considering the damage counterfeiting can inflict on both individual firms, customers, business partners, institutions, governments and society as a whole, it is easy to argue for strong brand protection programs. Despite this, many brand professionals struggle to justify investments in brand protection programs as executives and managers are increasingly questioning both effectiveness and efficiency of the anti-counterfeiting efforts (Fuchs & Zhou, 2010). Wilson et al. (2022) also highlights questions that firms struggle to answer regarding the extent of the counterfeit problem, how to allocate resources and how to measure the performance. Both Wilson & Grammich (2020) and Fuchs & Zhou (2010) argue that brand practitioners need reporting metrics commonly understood and accepted, such as return on investment or cost-benefit ratios. Even if brand protection programs are effective in terms of anti-counterfeiting, in order to maintain legitimacy, they also have to be profitable in the long-term (Fuchs & Zhou, 2010). Being profitable or generating a positive return on investment means different things for different brand protection programs. For companies such as Pfizer, brand protection programs revolve around patient health and safety (Sung, 2022). Whereas traditional return on investment focuses on financial aspects, which in many cases is too narrow of a measurement to account for all the benefits generated by a brand protection program (Wilson et al., 2022).

Fuchs & Zhou (2010) divides the effects of counterfeiting into short, medium and long-term losses. Short-term losses are said to be the direct loss in turnover in the current fiscal year due to counterfeits being bought instead of the genuine product. Medium-term losses can be attributed to the snowball effect of counterfeiter copying each other and slowly increasing their market shares. Lastly, long-term losses are synonymous to brand degradation, where loss of reputation and credibility slowly degrade the value of the original brand (Fuchs & Zhou, 2010). Costs caused due to liability of counterfeited products could also be included in long-term losses if identified (Fuchs & Zhou, 2010).

Calculating short-term losses can be considered the most basic case since it only looks at recuperating lost sales from counterfeiting, still difficulties arise. There is an inherent problem measuring and collecting data regarding counterfeiting activity since it is an illegal activity (Wilson, 2022). Calculating return on investment for an anti-counterfeiting program then in turn becomes unreliable since it depends on accurate data of past and current counterfeiting levels. Moreover, there is also an intrinsic problem regarding these types of return on investment measurements and how they tend to develop (Wilson, 2022). Suppose a firm implements a successful brand protection program which successfully eliminates all counterfeits over time. This will result in return on investment measurements trending towards zero since there is no longer any recuperating of lost sales. In this case return on investment will have a negative correlation with the effectiveness of the brand protection program.

Medium-term losses are the result of a snowball effect when counterfeiters copy each other and large secondary markets are created, resulting in loss of market share for the original manufacturer (Fuchs & Zhou, 2010). These costs can be calculated through the net present value of future losses due to reduced

market share (Fuchs & Zhou, 2010). Calculating this net present value requires accurate estimations of market share, market growth and loss of market share due to counterfeiters. Since counterfeiting is illegal, collecting accurate data of its market share and growth is unreliable (Wilson, 2022). Instead, firms can ask questions such as, how easy it is for counterfeiters to obtain materials, equipment and knowledge to manufacture the product, in order to assess the counterfeit threat (Kennedy et al., 2017). Being proactive can also reduce medium-term losses since the risk of counterfeiting is perceived as high by potential entrants (Kennedy, 2016; Reynolds, 2011). Although this approach also creates problems since forecasting and measuring the success from this type of activity could be difficult (Reynolds, 2011).

Additional difficulties arise calculating long-term losses and the effects counterfeiting has on brand value. Similarly to the short-term case where measuring anti-counterfeiting efforts depend on accurate counterfeiting measurements, measuring brand degradation requires accurate valuation of the brand. In order to accurately value a brand, it is necessary to define what is meant by brand value. Goldfarb & Moorthy (2009) define it as: "The extra profit earned by a brand over and above what it would have earned based on its search attributes". Search attributes are the attributes that consumers can see before purchasing the product (Nelson, 1970; Ford et al., 1990). According to Goldfarb & Moorthy (2009) the conceptual problem of measuring brand value lies in the counterfactual case, i.e. the value of the service or product if not identified by a specific brand. Deméré et al., (2022) also highlights the difficulties in measuring brand value and how failure to do so leads to undervaluing of anti-counterfeiting efforts. Lastly, calculating long-term losses in brand value is a delicate process since brands are often highly valued, changes of a few percent in damage factors will result in considerable monetary fluctuations (Fuchs & Zhou, 2010).

2.7 Measuring return on investment of Marketing

As discussed earlier, advertising plays a crucial role in building brand value. However, marketing departments increasingly face pressure to quantify the return on investment of their efforts (Hanssens & Pauwels, 2016; Mirzaei et al., 2011). This can be challenging because marketing initiatives can have long-term benefits like increased brand equity or customer loyalty, which are not always easily measured.

The overall goal of marketing is to increase the customer demand for the product (Hanssens & Pauwels, 2016). When discussing marketing efforts, one could use the concepts of effectiveness and efficiency. Effectiveness refers to the extent to which marketing activities achieve the desired goals, such as increased brand awareness (Mirzaei et al., 2011). Efficiency, on the other hand, focuses on optimal resource allocation (Mirzaei et al., 2011). Mirzaei et al. (2011) suggest prioritizing measuring effectiveness first, since all marketing efforts ultimately influence brand equity in the long term.

According to Mintz et al. (2020), in order to choose the right mix of marketing actions, purely financial metrics are the least effective metrics while customer-mindset focused metrics are the most effective. The importance of measuring marketing effectiveness has grown significantly in recent years (Cook & Talluri, 2004). This led to the development of the Return on Marketing Investment (ROMI) concept, which evaluates marketing costs against the additional profits generated by those efforts (Cook & Talluri, 2004). Ultimately, if the financial benefits cannot be demonstrated, advertising is often seen as a cost rather than an investment (Danaher & Rust, 1996).

One major challenge in measuring return on investment of advertising is accurately attributing the economic value generated by a single campaign (Danaher & Rust, 1996). Customers are often exposed to multiple campaigns before making a purchase, making it difficult to isolate the impact of a specific effort. Furthermore, advertising effects tend to be long-term, with some benefits only materializing over time (Danaher & Rust, 1996). This makes it difficult to directly link short-term sales figures to specific advertising campaigns. Danaher & Rust (1996) suggest the existence of an optimal advertising spending level, where neither too little nor too much is spent. This sweet spot considers economies of scale and diminishing returns.

2.8 Calculating Brand Value

Calculating brand value accurately is difficult and since there are no standardized methods, results can vary drastically. Academic researchers even struggle to find common understanding on what a brand constitutes (Kumar & Mishra, 2012). As stated above, Goldfarb & Moorthy (2009) defines brand value as: “the extra profit earned by a brand over and above what it would have earned based on its search attributes.” (Goldfarb & Moorthy, 2009). Where the search attributes are the attributes the customer can discover before purchasing (Nelson 1970; Ford et al. 1990). This approach distinguishes between brand equity and brand value. Brand equity is the extra utility a customer can derive because of the brand identity and brand value is the net present value of cash flows attributable to the brand equity (Goldfarb & Moorthy, 2009). Calculating brand value according to this method requires defining the value if the product or service had not been identified by the brand. The difference in value is then profits attributable to the brand.

Since there is not a commonly agreed upon method in the academic world, there is value in turning to methods used in a professional setting. Interbrand, Brand Finance and Kantar Millward Brown are all firms that present annual rankings of the most valuable brands worldwide. Although their methods differ slightly, they are all based on the same principle. They use the company's income statement as the starting point, then estimate how future profits can be attributed to the brand itself (Interbrand, 2021; Brand Finance, 2021; Kantar, 2021). Although the methods differ and can create significant differences in valuation, Interbrand's method is a recognized valuation approach used worldwide (Birkin, 1994).

The inherent difficulty of accurately measuring brand value makes it challenging to assess changes in brand value. Consequently, evaluating the impact of anti-counterfeiting efforts on brand value becomes even more complex, as it requires measuring both brand value itself and the changes caused by brand protection programs (Wilson, 2022).

2.9 Information diffusion

To understand the impact of an event, it's crucial to gauge the number of people it affects (Choon & Lim, 2020). Several factors play a role in determining this. The most important is the event's reach, which refers to the number of people exposed to it (Choon & Lim, 2020). To calculate reach, the diffusion of the information from an event needs to be understood, a phenomenon known as information cascade (Vosoughi et al., 2018). Modeling this spread is complex because information can diffuse through multiple layers, requiring approximations at each stage (Yang & Leskovec, 2010). As Yang & Leskovec (2010) point out, modeling information diffusion necessitates several assumptions, such as complete information being available and setting boundaries for the network within which the information travels.

2.10 Attitude change

Attitude change refers to a shift in a person's evaluation of something, moving from unfavorable to favorable (or vice versa) (Albarracin & Shavitt, 2018). Two key factors influence whether someone's attitude changes, source credibility and strength of the existing belief (Albarracin & Shavitt, 2018).

Source credibility refers to how trustworthy the person delivering the information is perceived to be, and this perception is individual, not necessarily based on public opinion (Bakker et al., 2013). Strength of belief refers to how strongly someone holds their current opinion (Albarracin & Shavitt, 2018). These factors together determine how many exposures to new information that are required for an attitude change (Cialdini et al., 1981). According to Cialdini et al. (1981), someone with a weak opinion might only need one exposure from a trusted source to shift their view, while someone with a strong belief may require multiple exposures from various sources. It is also important to consider confirmation bias (Tversky & Kahneman, 1974). People tend to be more receptive to information that reinforces their existing beliefs and may disregard information that contradicts them.

3. Method

This thesis utilizes a qualitative approach inspired by grounded theory to develop equations for estimating brand value degradation due to counterfeits, cost due to counterfeits and the return on investment of the brand protection program. The methodology consists of three different sources of data, a narrative literature, internal documents from a counterfeit takedown provider and semi-structured interviews. The internal documents provided valuable insights into current anti-counterfeiting practices, enriching the foundation of knowledge. The research process was an iterative approach, where the narrative literature review and interviews influenced each other. This ongoing analysis ultimately led to the identification of eight variables influencing brand value degradation due to counterfeiting.

3.1 Research strategy

When deciding which research strategy is appropriate to choose, there are two main alternatives, qualitative and quantitative (Bell et al., 2022). However, Bell et al. (2022) also note that in real situations, the distinction between qualitative and quantitative research is not as clear as it is depicted in literature. A main distinction between quantitative and qualitative research strategies lies in the data collection process (Bell et al., 2022). Quantitative research focuses on collecting quantifiable variables, such as numbers, while qualitative research gathers data in the form of words or pictures (Bell et al., 2022). Therefore, the chosen research strategy must align with the thesis goal. Since this thesis aims to construct an equation for estimating brand value degradation due to counterfeiting, a qualitative approach is most suitable due to the lack of data.

Furthermore, a research approach needs to be selected. Bell et al. (2022) emphasizes that qualitative analysis offers more flexibility in choosing an analysis approach compared to quantitative analysis. Due to the inherent complexity of this research area, an abductive approach was chosen. This is supported by Bell et al. (2022) who states that this iterative method, which involves moving back and forth between theory and data, is beneficial in complex and uninvestigated areas.

Moreover, Bell et al. (2022) distinguish between two qualitative research strategies, thematic analysis and grounded theory. The chosen strategy of this thesis has been inspired by grounded theory. In grounded theory, the researchers go back and forth between already established theories and collection of new data (Bell et al., 2022). Grounded theory can be broken down into its core tools and the resulting outcomes (Bell et al., 2022). This thesis utilizes theoretical sampling and theoretical saturation, which are commonly associated tools within grounded theory (Bell et al., 2022). The outcomes of the thesis are variables influencing brand value degradation due to counterfeiting, cost due to counterfeiting and return on investment of the brand protection program. This could be compared to concepts and categories, which are vital parts in grounded theory (Bell et al., 2022).

3.2 Data Collection

This master thesis uses a mixed data collection method including a narrative literature review, semi-structured interviews with field experts and internal data from a counterfeit takedown provider. This combination is encouraged by Bell et al. (2022) since it increases the possibilities for triangulation which enhances the validity of the study. An initial compliance test was conducted to gain a preliminary understanding of the prevalence of counterfeit listings on online marketplaces. This method is supported by Shepherd et al. (2023), who argue that compliance tests can be a valuable tool for understanding the current state of a phenomenon. However, the results of this test were not included in the final analysis as it was intended for the researchers' familiarization with the area of study.

3.2.1 Narrative Literature Review

To gain a deeper understanding of the topic, a narrative literature review was conducted. This choice is supported by Bell et al. (2022), who argue that narrative literature reviews are suitable for researchers seeking a comprehensive understanding of a topic. Furthermore, a narrative literature review is particularly suited for connecting concepts across scientific disciplines and fostering new interpretations of existing knowledge (Baumeister & Leary, 1997). This approach aligns well with this thesis, which utilizes knowledge from various fields. Additionally, the narrative literature review incorporates a broad range of articles. This characteristic, as noted by Bell et al. (2022), allows for a deeper exploration of the topic and strengthens the potential for contributions to the field.

Since the scope of the literature review is to gain broad understanding of the topics surrounding counterfeits, the study was not limited to certain keywords. Instead it was expanded through the use of forward snowballing, which means that relevant articles found in the other articles will be further examined (Bell et al., 2022). Furthermore, it was an iterative process between the different data sources, where new insights from interviews resulted in additional areas for the narrative literature review. Additionally, the interviewees suggested relevant literature that was incorporated into the study.

Bell et al. (2022) argues that the literature review should continue until theoretical saturation is reached. This could be achieved in three ways, no additional data is added through the studying of new articles, the area is well developed or relationships are well established between the categories (Bell et al., 2022). To reach the purpose of the narrative literature review, which is to gain knowledge about the field and identifying connections between themes, the narrative literature review proceeded until theoretical saturation was reached. Theoretical saturation was achieved through the criteria that no additional knowledge was added through reading more literature on the theme.

3.2.2 Interviews

In this thesis, semi-structured interviews were conducted. The choice of interview type is supported by Bell et al. (2022) who states that semi structured interviews allow for flexibility since it does not limit the interview to specific questions. This adaptability is particularly valuable for this thesis, as it enables the exploration of unforeseen connections that might not have emerged with a more rigid interview format. Furthermore, the themes that were planned to be discussed in the interviews were sent to the interviewees in advance, since this increases the dependability (Bell et al., 2022). This also facilitated preparation, as some themes involved data that the interviewees were encouraged to bring to the discussion.

Regarding interview objects, they were from a variety of areas, including shipping, online counterfeit takedowns, marketing and intellectual property rights. This strengthens the data collection of the thesis since several perspectives are included (Bell et al., 2022). All interviews were recorded with the informed consent of the participants, facilitating the data analysis process. Information about the interviews can be found in *Table 1* below.

The sampling approach for the interviews was a purposive sampling. The choice of a purposive sampling instead of a random sampling was made since the idea of a purposive sample is to strategically choose participants that are relevant to answer the research questions (Bell et al., 2022). More specifically, theoretical sampling was obtained, meaning choices of interview objects were made continuously in order to reach new theoretical understanding (Bell et al., 2022). Furthermore, the theoretical sampling was carried through keeping all three types of sources in mind. This means that the insights from the literature and the internal documents guided the choice of new interview objects. This resulted in interviewing people who were not up for debate in the beginning, yielding valuable new insights that might not have been identified otherwise.

Interview	Background	Date	Duration	Means
1	Commercial lawyer & Senior IP strategist	22-03-2024	56 minutes	In person
2	Head of Global IP at large shipping company	04-04-2024	43 minutes	Virtual
3	IP takedown specialist	08-04-2024	28 minutes	Virtual
4	IP takedown specialist	08-04-2024	32 minutes	Virtual
5	Professor in marketing strategy and consumer behavior	23-04-2024	34 minutes	Virtual

Table 1. Interviews

3.2.3 Internal documents

The third source of data that was used in this thesis is internal documents from a counterfeit takedown provider. Access to information regarding the current methods for taking down counterfeit listings, the magnitude of the counterfeit problem and methods for calculating the magnitude was presented in the documents. Bell et al. (2022) raises a problem with internal organizational documents, namely that these documents are written with a purpose (which is often not the same as the purpose of the study). Therefore, it is important that these documents also were discussed with personnel at the company who could explain the documents further and clarify uncertainties.

3.3 Data analysis

The approach for data analysis of this master thesis is inspired by grounded theory. As described above, the data analysis has been done in parallel with the data collection, where the initial data analysis indicates the direction of the further data collection. The three types of data were analyzed concurrently, allowing for a comprehensive understanding through the triangulation of findings.

Bell et al (2022) emphasize that an important part of grounded theory is to identify concepts, which then is grouped into categories. The initial data collection for this research involved analyzing the narrative literature review and internal documents. The literature and internal documents were then categorized into concepts, which guided the authors in their search for relevant interview objects. Initial interviews were then conducted and the interviews were transcribed using OtterAI. The software autogenerates transcripts which, in order to guarantee the accuracy, the authors thoroughly went through and compared to the interview recordings.

The interviews were then broken down into concepts, guiding the further narrative literature review. This was done shortly after the interviews were conducted, which according to Bell et al. (2022) increases the understanding of the concepts. The insights from the initial interviews guided the narrative literature review and new areas were explored. This iterative process led to the exploration of new areas within the existing literature, ultimately yielding ideas from other disciplines that could be incorporated into the thesis. This iterative process continued with interviews involving experts from the newly identified areas. Finally, another round of literature studies was conducted to deepen the understanding. Then the identified concepts were grouped into categories. These categories emerged as the variables in the equations presented in the results section.

3.4 Model Development

The research began with a narrative literature review, while concurrently reviewing internal documents from the counterfeit takedown provider. In the beginning, the narrative literature review focused broadly on counterfeiting, then narrowed down to studying measurement of the effectiveness of anti-counterfeiting efforts. Due to limited literature in this specific area, theoretical sampling was employed to identify interview subjects. The initial interview with an IP lawyer expert offered new research areas, including advertising, expert damage reports and pest control in agriculture. While the advertising literature provided some insights, the connection to the effectiveness of anti-counterfeiting efforts proved tenuous. The exploration of pest control in agriculture yielded no relevant findings for this thesis.

A significant development emerged from the analysis of expert damage reports. These reports provided models for estimating the monetary value of reputational harm. Concurrently, three additional interviews were conducted to gain deeper insights into counterfeiting and the challenges of measuring brand protection program effectiveness. To explore how insights from expert damage reports on reputational harm could be applied to counterfeiting, an interview was held with the author of several of these reports. This interview led to a refocusing of the narrative literature review towards information models and attitude change. The research revealed eight variables that influence brand value degradation caused by counterfeiting.

3.5 Ethical consideration

Bell et al. (2022) raises four different concerns regarding ethics: harm to participants, lack of informed consent, invasion of privacy and deception. Although, it is important to keep in mind that these four topics are interrelated (Bell et al., 2022). Regarding harm to participants, Bell et al. (2022) states that harm could involve a lot of different aspects. In this research, it could cause harm to the interview object's career if they for instance disclose anything controversial and the anonymity burst. Therefore, it is important to respect the integrity of the interview objects. This is done by not describing the interview object in too much detail. Furthermore, another risk of causing harm to the participants could be if sensitive information from the internal document is disclosed. This risk is mitigated by not disclosing sensitive data from the documents in the thesis.

The second aspect, lack of informed consent, is present in the data collection regarding the interviews. Bell et al. (2022) emphasizes that the interview object should be as informed as possible about the study so that they could make an informed decision regarding their participant. The interview objects were in advance informed about the subject and purpose of the thesis. Furthermore, the interview objects have been asked whether they accept being recorded, which all interview objects accepted. These measures have increased the chance that the interview objects have made informed consent.

The third aspect, privacy, is connected both to the internal documents and the interview. Bell et al. (2022) describes that when the interview objects do an informed consent, they to some degree accept that the privacy, to some extent is decreased. Although, since anonymity is ensured, both for the company and for the individuals, the privacy is protected.

The fourth and last aspect, deception, regards the authors of the thesis and how they depict the research (Bell et al., 2022). It could involve both the outcomes or for example how the study is presented for the interview objects (Bell et al., 2022). Hence, it is important that the authors have been completely transparent to the involved people in the study and not to exaggerate the results and implications of the study.

Another ethical aspect that Bell et al. (2022) mentions to have in mind is the source of funding of the research. For this thesis, the authors have not received any funding from any external companies, which diminishes the risk that this factor affects the outcome of the master thesis.

3.5.1 Societal and ecological consideration

As discussed in the background chapter, counterfeit goods pose a significant threat to society. Counterfeiting can lead to serious health risks and injuries for consumers due to the use of substandard materials and poor manufacturing practices (EUIPO, 2016). Even beyond these immediate dangers, the overall quality of counterfeit products is often unreliable, which can negatively impact consumers and society as a whole. Additionally, counterfeit production often bypasses environmental and ecological regulations, potentially causing harm to the environment. A desired outcome from the thesis is that in the long term, the total production of counterfeits will be lowered through more effective brand protection programs. However, it is not the primary goal of the thesis.

3.6 Method discussion

As discussed earlier in the Method section, a mix method of data sources was used. Therefore, on an aggregated level, the thesis is rich on data. However, diving into each category, the number of interviews is limited to 5 which is a low number of interviews, especially since these 5 interviews cover different topics. However, as the interviews are used together with the internal documents and the narrative literature review, it could be argued that 5 interviews still serve its purpose.

The choice of using a qualitative method over a quantitative method could also be elaborated on. The results from this thesis might not be generalizable due to its lack of statistical tests. However, since this area is not well explored, it is argued that using a qualitative method to build a foundation on is a good starting point. In the future, these results could be validated through statistical tests. Furthermore, during the initial part of this thesis, the intention was to utilize the data from the internal documents to validate the variables identified from the study. However, when access to the internal document was granted, it was understood that the internal documents were not as rich in data as described

in advance. Instead, it was used to understand the current counterfeiting landscape and how firms are currently measuring the effectiveness of the brand protection program.

Moreover, looking into the data in the internal documents from the counterfeit takedown provider, the data was from a single firm. However, the methods used in the documents were standardized and therefore, the documents were still useful for the purpose of the thesis.

An aspect that decreases the possibility of replication of the study is that the narrative literature review was conducted without a set of fixed keywords. This was done since the narrative literature review were expanded throughout the study in an iterative process, utilizing new knowledge gathered from the three data source types.

4. Results and variable discussion

In this section, the results from the narrative literature review, the interviews and the internal documents is presented. Furthermore, the analysis of this information has culminated in three equations presented below. Moreover, each variable will be elaborated on.

4.1 Interviews, literature review and internal documents results

Data for this research was collected from three sources, semi-structured interviews, a narrative literature review, and internal documents from an online counterfeit takedown provider. These sources were used concurrently, with insights from each informing the analysis of the others and guiding the overall data collection process. This section will present the findings from these sources in tables for clear visualization of the information that each source provided.

The results from the semi-structured interviews are summarized below in *Table 2*. This table shows the findings from the interviews and which interviewee provided the specific information. Interview 1 discussed primarily the counterfeit problem in general and measurements for brand protection programs. In this interview, it was highlighted that there is a lack of current measurements of anti-counterfeiting activities. During Interview 2, the focus shifted to the firm's perspective on the counterfeit problem, as the interviewee was an employee at a shipping company. The discussion highlighted the need for a comprehensive equation to capture the total cost due to counterfeits and methods to measure the effectiveness of their brand protection program. Information on how the shipping company operates its brand protection program was also discussed. Interview 3 and 4 were with employees at the online counterfeit takedown provider firm and focused on how they operate and the current limitations in their methods, which supported the idea that brand value degradation was currently not taken into consideration. Lastly, interview 5 was about the information model and how reputational damage could be calculated, which were used to understand how the brand value degradation could be estimated.

Findings	Interviews
One counterfeiter could infringe several firms' trademarks with one single counterfeit	1,3,4
Information regarding unique customers could probably be obtained from collaboration with online marketplaces	1,2,3,4
Number of unique customers could be obtained through surveys. Which is easier to do in countries with weak privacy laws.	1

Surveying unique customers to understand the percentage deceived and unsatisfied	1
Calculating the reach of an event is potentially complex and uncertain	5
Has used a general information model in several expert damage reports	5
Used impression rate and receptiveness to estimate the reach. Receptiveness is only necessary to take into consideration when the audience holds strong opinions.	5
Use industry experts to do a first estimation of information diffusion, this is sufficiently accurate	1,5
Using only one layer of information cascades would work for a first estimation	5
The number of exposures needed for attitude change vary depending on conviction of opinions, ranging from one to infinity	5
Opinions regarding most brands could be assumed to be possible to change, ranging from 1 to 7 exposures required	5
It is more difficult to measure the impact of proactive brand protection activities than reactive ones	1,2,3,4
Counterfeiters are criminals who are not deterred by the legal system	1
Firms are currently able to calculate the direct loss due to counterfeiters fairly accurately	1,2
Calculating the snowball effect of counterfeiters in the market is difficult	3,4
Publicly available data from online marketplaces could be leveraged to calculate the direct loss due to counterfeits. Applying a trademark license to the sales would give the theoretical profits.	1,2
It is impossible to eliminate all counterfeiters in a market	1,3,4
New counterfeiters will enter the market	1
Initiating a counterfeit takedown program resulting in two phases, a cleanup phase and a steady state	3,4
Measuring the impact and effectiveness of a brand protection program is complex and the results are uncertain	1,2

There is huge interest from brand professionals in an equation that estimates brand value degradation due to counterfeits	1
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Table 2: Summary of the interviews.

The results from the narrative literature review are summarized in *Table 3* below. It shows the findings from the literature, and which sources the information comes from. In the early stages of this thesis, findings from the narrative literature review were used to understand current challenges in calculating brand value degradation due to counterfeiting. It resulted in the thesis focusing on the long-term effect, defined as the brand value degradation due to counterfeiting. Having explored and gained a deeper understanding of current challenges, the research identified both the driving factors behind why customers purchase counterfeits and how firms can implement proactive and reactive measures to combat counterfeiting. After conducting interview 5, information diffusion and attitude change literature was incorporated, which were identified as key variables in order to calculate the brand value degradation due to counterfeits.

Findings	Literature
Customers mainly buy counterfeits due to the lower price	Sullivan et al. (2017), EUIPO (2020), EUIPO (2023), Alhabash et al. (2023)
Driving factor for buying counterfeits is the gap between disposable income and price of goods	Reynolds (2011), Shelley (2012)
Customers who perceive no additional value from the original brand is more likely to buy counterfeits	Basu et al. (2015)
Brands are more important for experience goods than search goods	Smith & Park (1992)
Online purchases, especially through social media platforms positively predicts purchasing of counterfeits	EUIPO (2023), Alhabash et al. (2023)
Modeling the diffusion of information is difficult since it can diffuse through multiple layers	Yang & Leskovec (2010)
Exposures required to change attitude depends on a person's beliefs	Cialdini et al. (1981)
Trustworthiness of a source is important when it comes to changing attitudes	Albarracin & Shavitt (2018)

The trustworthiness of a source is an individually held view	Bakker et al. (2013)
The focus of marketing campaigns should be on effectiveness	Mirzaei et al. (2011)
How cost of quality framework can be applied in a counterfeiting context	Deméré et al. (2022)
It is difficult to measure effectiveness of brand protection programs	Deméré et al. (2022), Reynolds (2011), Wilson (2022)
Proactive methods are more effective than reactive measures	Wilson & Kinghorn (2016)
Value generation is difficult to measure since brand protection is a multi-functional activity	Kennedy (2016)
Litigation costs are a significant expense for brand protection programs	Wilson (2022), Ertekin et al. (2018)
Litigation increases perceived risk for counterfeiters	Kennedy (2016), Reynolds (2011)
There is a potential for liability costs stemming from counterfeits	Fuchs & Zhou (2010)
Brand protection losses can be divided into short-, medium- and long-term losses	Fuchs & Zhou (2010)

Table 3: Summary of the narrative literature review.

The third type of data source for this thesis was internal documents from an online counterfeit takedown provider. Additionally, they revealed patterns observed after initiating a brand protection program. The results from the internal documents are summarized in *Table 4* below. Analysis of these documents guided the direction of the narrative literature review. Furthermore, understanding how current methods calculate losses due to counterfeits, the need for a brand value degradation equation was highlighted since this was currently missing.

Findings	Source
Counterfeit takedown programs have two phases. A cleanup phase where the number of takedowns is high and a steady state with a lower number of takedowns.	Internal documents

During the steady state, number of takedowns oscillates around a mean value	Internal documents
Some online marketplaces publicly disclose units sold and total revenue	Internal documents
Direct loss is calculated through a potential trademark licensing fee of 5%	Internal documents

Table 4: Summary of the internal documents

4.2 Towards the equations

Based on the current literature, internal anti-counterfeiting documents from a takedown provider and semi-structured interviews, critical variables for assessing the brand value degradation due to counterfeits, cost due to counterfeits and the return on investment of the brand protection program have been identified. The results from the narrative literature review highlights that Fuchs & Zhou (2010) discuss how the effects from counterfeits can be divided into three time horizons: short-term, medium-term, and long-term. They present explicit formulas for calculating the short- and medium-term effects, which firms are currently able to calculate. This is further supported by the findings in *Table 2*. Interview 1, 2, 3, and 4 all indicate that firms currently calculate these losses due to counterfeits. Similarly, *Table 4* shows that the online counterfeit takedown provider also has methods for calculating these losses. The results thus indicate that a current gap in practice exists, calculating the long-term losses due to counterfeits. Therefore, this work has focused on the long-term effects, which have been defined as brand value degradation. Long-term effects inherently materialize over longer periods of time. However, in this thesis, to simplify the analysis, long-term effects are assumed to occur instantly. This eliminates the need for a discounting variable, but at the cost of reduced accuracy.

As been seen from the results in *Table 3*, the currently accepted methods among the literature assumes a counterfeit degrades brand value, with the degraded amount representing the harm the counterfeit inflicts on the firm. However, as shown in *Table 2*, interview 1,2,3 and 4 together with the limitations discussed in existing literature suggest that calculating brand value degradation is quite difficult. Therefore, this thesis aimed to use another approach. Instead calculating the harm from counterfeits was based on the cost to repair the reputational damage. This approach was initiated by interviewee 5's model of reputational damage. Consequently, the value of a brand protection program becomes the avoided cost of repairing the reputational damage. By further developing interviewee 5's information model, the damage on the brand value due to counterfeits could be assessed. In order to calculate the brand value degradation due to counterfeits, total cost due to counterfeits and return on investment for brand protection programs, eight variables have been identified, which can be seen in *Table 5*.

Variables	Descriptions
n	Number of unique customers buying this counterfeit
p	Percentage of n deceived and unsatisfied
λ	Information diffusion
x	Exposures required for attitude change
c	Customer acquisition cost
I	Total cost for the brand protection program
CR	Conversion rate
DL	Direct loss

Table 5: Identified variables used to calculate the brand value degradation due to counterfeits, total cost due to counterfeits and return on investment of brand protection programs.

The chosen approach to calculate the return on investment of brand protection programs could be divided into three steps. The first step is to calculate the brand value degradation due to counterfeits, which is illustrated in *Equation 1*. Step two is to calculate the total costs due to counterfeits, which includes the direct losses. This can be calculated through *Equation 2*. In order to calculate the direct losses, Fuchs & Zhou (2010)'s method for calculating short- and medium-term losses could be applied. Direct losses are calculated as the sum of current lost sales due to counterfeits and the net present value of future cash flow losses resulting from decreased market share caused by counterfeits. Thereafter, the return on investment of the brand protection program is calculated through *Equation 3* below. In this equation, the conversion rate is taken in consideration, meaning what percentage of the potential customers that could be converted to the original brand. Furthermore, the cost of the brand protection program is incorporated in order to calculate the return on investment of it.

$$BV_{deg} = n * p * \frac{1}{x} * \lambda * c$$

Equation 1: Brand value degradation due to counterfeits

$$Cost = DL + n * p * \frac{1}{x} * \lambda * c$$

Equation 2: Cost due to counterfeits

$$ROI = \frac{DL * CR + CR * n * p * \frac{1}{x} * \lambda * c - I}{I}$$

Equation 3: Return on investment of brand protection programs

4.3 The variables of the equations

This discussion aims to gain a deeper understanding of the variables and their roles within the equations. To achieve this, the variables will be thoroughly explored. Additionally, theoretical frameworks and findings from the interviews will be discussed to highlight important aspects of the variables. Finally, methods for estimating the variables will be presented and their respective difficulty to estimate.

4.3.1 Number of unique customers

A crucial aspect of assessing brand value degradation due to counterfeits is estimating the number of potential customers of the original brand that have bought the counterfeit. It is important to note that the number of potential customers of the original brand that chose to buy the counterfeit and the total number of buyers of the counterfeit differ. It could be assumed that the total number is higher than the number of potential customers to the original brand. The main reason for this according to Sullivan et al. (2017) is that the buyer of the counterfeit might have bought it due to its lower price and therefore, it would not be a potential buyer of the original brand due to the customers low purchasing power. Basu et al. (2015) highlights another factor, which is that customers who perceive no additional value from the original brand may be more likely to purchase a counterfeit. One final reason emphasized in interview 1,3 and 4, which are applicable for some industries, such as shipping, is that the counterfeiter infringes several brands in order to increase the credibility of the service. In these cases, even though there is no significant price or utility difference between the counterfeit and the original brand, the customer cannot be considered a potential customer of the original brand. This is because it is difficult to associate the customer with a specific brand when the counterfeit infringes several brands.

Looking into how firms can obtain this data in practice, a first step could be to focus on the big online marketplaces. Currently, specific information regarding the number of unique customers is not publicly available but according to interview 1,2,3 and 4, it is highly probable that this information could be obtained through contact with the online marketplaces. If the necessary information cannot be obtained through collaboration with the online marketplaces, an estimate could be made by utilizing publicly available data sources. The internal anti-counterfeiting documents show that the total amounts sold of a product and the unit price could be derived from the public

data. Although, neither of these methods take into account the aspect that not all counterfeits could be converted into a loss of a potential customer.

From interview 1, the first method was further developed to take the uncertainty regarding potential customers into account. By collaborating with online marketplaces, contact information to the customers of the counterfeit could be obtained. These customers could then be surveyed, asking them about price range and willingness to buy the original brand. When assessing the effectiveness of this tactic, one aspect to consider is the stringency of privacy laws in the countries where it will be implemented. Interviewee 1 suggested that this method would be suitable in the US and China since they have weak privacy laws. A limitation of this technique is its potential lack of generalizability across all markets. While estimations might be feasible in certain contexts, they would serve primarily as an indicator for untested markets.

As discussed above, obtaining a rough initial estimate of this variable should be relatively straightforward for firms. However, acquiring a more precise value may prove difficult and resource-intensive, requiring collaboration with online platforms and surveys targeting counterfeit purchasers.

4.3.2 Percentage of n deceived and unsatisfied

In order to understand the potential brand value degradation due to counterfeits, it is important to understand what percentage of the unique customers that are deceived into purchasing counterfeits and whether these counterfeits caused them dissatisfaction. These two characteristics are chosen because if a customer is aware they bought a counterfeit, the firm's image is likely not directly affected by the counterfeit's performance. Furthermore, if the counterfeit provides the same quality as the original, it will not negatively impact the brand image since the customer will not notice it is a counterfeit.

When estimating this variable, it is important to understand customers' purchasing behavior and how it differs between products, demographics and geographics. For the product's characteristics, the most important variable is the price, since affordability is the biggest predictor of counterfeiting prevalence (Sullivan et al., 2017; EUIPO, 2023; Alhabash et al., 2023). Luxury goods are placed in this category and also fulfills the external gratification factor of belonging to a social group which according to Basu et al. (2015) is the biggest predictor of buying counterfeits. Products that provide no extra utility due to the brand are also commonly substituted by customers with counterfeit alternatives (Basu et al., 2015). Another factor that plays a part is whether the product mainly has experience or search attributes. Since brand is more important for experience goods than for search goods according to Smith & Park (1992). Therefore, the risk of being unsatisfied by counterfeited experience goods could be higher, since features and quality is not easily assessed beforehand.

Which demographic the product caters towards also plays a big role since the purchasing of counterfeits is overrepresented by young buyers and in online purchases (EUIPO, 2023; Alhabash et al., 2023). This is true for both people

who knowingly purchase counterfeits and people who are deceived. Therefore, it is important to have good knowledge of your customers demographic to estimate this variable. It is also important to understand the purchasing behavior in terms of online versus in store ratios, since online purchases, especially through social media platforms positively predict purchasing of counterfeits (EUIPO, 2023; Alhabash et al., 2023).

Where the product is sold geographically is also important since views and culture around buying counterfeits differs between countries as well as socioeconomic standards. Studies from the EUIPO (2023) show big differences in counterfeit purchasing behavior in countries within the EU and compared to ASEAN countries the differences are significant (Shepherd et al., 2023). Therefore, you can expect a higher percentage of customers that are deceived into buying counterfeits in countries not as economically developed, where price plays a bigger part and counterfeiting is more socially accepted.

Considering the huge differences all of these variables can create, it is difficult to estimate a generic percentage of how many customers are deceived into purchasing a counterfeit and are unsatisfied. According to interviewee 1, using a similar method as discussed for acquiring the number of unique customers could be used. Namely, surveying customers through obtaining personal data from large online marketplaces hosting counterfeiters listings, is one viable way to collect information. This is easier to do in countries such as the US and China which both have weak privacy laws. Then you can compare this data to previous studies depending on the region and estimate a credible minimum.

The Alhabash et al. (2023) study provides valuable data for estimating the number of unsatisfied customers who unknowingly purchased counterfeits. Their research found that 68% of participants were deceived into buying a counterfeit at least once in the past year. Of these deceived customers, 38% opted to keep the counterfeit after realizing it was not genuine.

While assuming the 38% who kept the counterfeit were satisfied is likely an overestimation as some may have kept it for reasons other than satisfaction, it allows for a baseline estimate. Since the number of satisfied customers is likely an overestimation, the unsatisfied customers are in turn an underestimation. This is in line with the goal of the equations, which is to provide a credible minimum value. To calculate this, we can multiply the percentage deceived (68%) by the assumed dissatisfaction rate ($100\% - 38\%$ who kept it = 62% unsatisfied). This yields an estimated 42% of deceived customers who likely remained unsatisfied with their counterfeit purchases. It is important to remember that this is a very rough estimation, and the true number may vary depending on the factors discussed previously.

4.3.3 Exposures required for attitude change

As Cialdini et al. (1981) explains, depending on the characteristics of a person's beliefs, it might require several exposures of an opinion in order to change the attitude of the person. Therefore, when assessing the harm of brand value due to counterfeits, the number of exposures required to change an opinion needs to be taken into account. This variable was also highlighted by interviewee 5 when discussing ways to calculate the number of people who change their minds regarding a firm due to a counterfeit. Additionally, the interviewee mentioned that under certain situations where people have extra strong opinions, the required number of exposures to change this opinion could be infinite. This is especially true for strongly held opinions, such as political views or those defining personality. While the interviewee acknowledged strong opinions are resistant to change, it was suggested that, in general, most people's attitude about products can eventually change. The interviewee suggested that for people with weak opinions, a single exposure could be enough to change their minds, which aligns with the result of Cialdini et al. (1981). The interviewee further suggested that for people with strong conviction, around seven exposures might be necessary.

Albarracin & Shavitt (2018) argue that the trustworthiness of the source is also important. This factor could either be factored into the information diffusion variable or used to estimate the number of exposures required for attitude change. Knowing your customer base and which sources they trust allows you to leverage those trusted sources to effectively change attitudes. According to Bakker et al. (2013) the trustworthiness of a source is not determined by society, it is an individually held view. For example, when trying to change opinions about a product catering towards older people, advertising on social media platforms might be seen as less credible than traditional media like newspapers or television. In order to change attitudes, the marketing strategy has to be effective, which Mirzaei et al. (2011) argues should be the focus of marketing campaigns. By optimizing the campaign, the required number of exposures for attitude change can be reduced.

A method for firms to gather this information in a practical way would be to collaborate with the advertising department to leverage their estimates of the required number of exposures to attract a new customer. Although, in this method, Tversky & Kahneman (1974) reasoning about confirmation bias must be taken into consideration. Attracting a new customer is essentially changing their opinion from neutral to positive. Similarly, damage from counterfeits can shift a positive opinion to negative, although due to confirmation bias this might require significantly more exposures. However, it also means that a negative shift might require more exposures to change the opinion back.

Furthermore, in cases where the advertising department lacks specific data on exposure numbers, general approximations could be used as a first estimate. In those cases, a high exposure number of seven and a low number of one could be used as an upper and lower limit. Therefore, it could be argued that

doing an initial estimation of this parameter is easy but doing a more accurate estimation would be quite hard.

4.3.4 Information diffusion

When assessing brand value degradation due to counterfeits, one aspect to keep in mind is that potential customers can be affected by the fact that someone else talks negatively about a brand. This could result in the brand equity, which is the extra utility that the brand gives to the customer (Goldfarb & Moorthy, 2009), being lowered since the potential customer gets false information about the original brand. Therefore, a variable that affects how much the brand value is degraded due to counterfeits is the diffusion of this information. The goal is then to estimate what Choon & Lim (2020) describe as the reach of the information. Although, from interview 5, it is concluded that calculating the reach of an event could be a complex and an uncertain task, which is in line with Yang & Leskovec (2010)'s research.

Despite the complexity, interviewee 5 based several expert damage reports on a general information diffusion model. These reports have been successfully used in US court cases for determining damage compensation. Insights derived from the equations in those reports have assisted in the development of the equations in this thesis. The general equation that the interviewee had used consisted of estimating two variables that together can represent the reach. These two variables are introduced as the concepts of impression rate and receptiveness. The impression rate is defined as the likelihood that the information will be diffused to one other person. Although, in order to increase the accuracy, it is important to keep in mind Yang & Leskovec (2010)'s reasoning regarding information diffusion, namely that an information diffusion involves several information cascades. This implies that this impression rate might need to be applied several times and in some cases be extrapolated to fit the unique situation. Furthermore, in the general case, the variable of exposures needed for an attitude change could be incorporated into the information diffusion model. After all, simply hearing about a new product might not be enough to change someone's attitude towards it. However, in simplified models, this variable can be neglected, as including it can significantly increase complexity.

The other aspect that interviewee 5 raised was the receptiveness. This is the percentage of the audience that is receptive to the news. Interviewee 5 emphasized that this variable is only needed in cases where the audience could have a strong opinion in the subject, e.g. politics. However, it could be argued that in most industries, the receptiveness could be assumed to be 100% since most customers do not have pre-existing opinions about goods. This reasoning aligns with what interviewee 5 suggested.

As has been discussed above, an accurate model of the information diffusion is quite complex to obtain and therefore, a more suitable first approach could be to ask experts in the industry to make an estimate of the impression rate. This approach is also suggested by interviewees 1 and 5, who argue that this

would be a “good enough” estimate. Further, interviewee 5 suggested that assuming only one layer information diffusion would be enough when doing the first estimate. To summarize, this variable could be complex to estimate but by utilizing the current knowledge a fairly good estimate could be delivered.

4.3.5 Customer acquisition cost

There are some different approaches to calculate this value. One method involves estimating the average cost to reach out to a customer whose perception has been negatively impacted and restore their view of the brand. However, this approach can be prohibitively expensive and time-consuming to implement effectively. An alternative estimation involves equating the cost of regaining a customer with the cost of acquiring a new customer through an advertising/marketing campaign.

However, this is likely a conservative estimate, as supported by interview 5 since regaining trust is typically more difficult than attracting new customers. Nevertheless, leveraging existing marketing data on customer acquisition costs provides a readily available starting point for estimation, even though it might underestimate the true cost. This data's accessibility makes it a valuable starting point despite potential limitations. Acquisition costs naturally vary significantly across different industries, products, brands, and so on. Therefore, presenting a single, general value for customer acquisition cost would be of limited value.

Customer acquisition costs can be seen as an external failure cost as shown in the adaptation of the cost of quality framework (Deméré et al., 2022). External failure costs are the failures (counterfeits) that slipped through the anti-counterfeiting program and reached the end customer. In this case it resulted in the customer abandoning the original brand. Therefore, you can relate the customer acquisition costs to anti-counterfeiting and prevention costs. If prevention costs result in protection of more customers buying counterfeits than an equal investment in customer acquisition would gain in customers, then it has a higher return on investment. If the costs of preventing one more customer from buying a counterfeit equals the cost of acquiring one more customer, then an optimal level of brand protection has been reached. Therefore, understanding this cost and how it relates to prevention costs from the cost of quality framework is important to reach an optimal level of brand protection. However, since the controllability is lowered when the cost of quality framework is applied to counterfeiting costs, caution is advised when comparing the values (Deméré et al., 2022).

4.3.6 Cost of brand protection program

Reynolds (2011) highlights the difficulty of measuring the effectiveness of brand protection programs. To address this challenge, *Equation 3* has been constructed. This equation compares the savings achieved from the brand protection program with the total program cost. As noted in the literature, brand protection measures are typically categorized as proactive or reactive. Wilson & Kinghorn (2016) argues that preventive measures are more effective than reactive measures. Although, according to interview 1, 2, 3 and 4, the preventive ones are in general harder to evaluate. However, Wilson & Kinghorn (2016) arguments regarding differences in effectiveness between proactive and reactive measures are purely qualitative. Utilizing *Equation 3*, the effectiveness of brand protection programs can be measured quantitatively, providing executives with a quantifiable metric to guide their decision-making. However, a limitation of this approach is that the formula assesses the effectiveness of the entire program, not the efficiency of individual anti-counterfeiting activities.

This could be connected to the theories about return on investment of marketing where Danaher & Rust (1996) argues that it is difficult to measure this on activity basis. Danaher & Rust (1996) highlight that marketing efforts are interconnected, making it challenging to isolate the impact of a single activity on the final purchase decision. This concept applies equally to brand protection programs, as argued by Kennedy (2016). Kennedy (2016) emphasizes the involvement of various organizational functions within brand protection, making it difficult to pinpoint the value generated by each individual action. Consequently, *Equation 3* focuses on maximizing the overall value delivered by the entire brand protection program, rather than attempting to measure the return on investment of specific activities within the program.

Litigation costs against counterfeiters are a significant expense within brand protection programs, as acknowledged by Wilson (2022). However, the effectiveness of litigation as an anti-counterfeiting strategy remains a point of debate. Reynolds (2011) argues that pursuing legal action against counterfeiters is an inefficient use of resources, diverting efforts from potentially more impactful measures. On the other hand, Kennedy (2016) suggests that the threat of litigation can deter future counterfeiting activity by increasing the perceived risk for criminals. This deterrence effect, however, seems to be contested in practice. Interviewee 1 offered a contrasting perspective, arguing that full-time counterfeiters are not easily deterred by the legal system and its potential punishments. Furthermore, Fuchs & Zhou (2010) raises a concern regarding the liability costs stemming from counterfeits. When customers are deceived into purchasing counterfeits, they might file complaints or even lawsuits against the original brand, resulting in significant costs. A strong brand protection program can mitigate these risks by reducing the prevalence of counterfeits and the associated customer complaints. This cost reduction is a factor not yet incorporated into the equations presented earlier. Consequently, these formulas might underestimate the overall value delivered by brand protection programs.

A practical method for calculating the total cost of a brand protection program involves simply adding the costs of each included activity. However, as Kennedy (2016) argues, brand protection programs often encompass functions across various departments, making it challenging to define clear boundaries for what constitutes a brand protection activity. Therefore, a first step for cost estimation could leverage the existing cost structure of the brand protection department. This readily available data provides a starting point for a rough estimate of the program's overall cost.

4.3.7 Direct loss

Direct loss refers to the immediate financial loss incurred when the original brand loses sales due to counterfeits. It's the most straightforward type of loss and, according to interview 1, 2 and Fuchs & Zhou (2010), also the easiest to quantify. However, a discrepancy exists between the methods used by Fuchs & Zhou (2010) and those employed in internal documents for calculating this direct loss.

Fuchs & Zhou (2010) propose a method that considers both short-term and medium-term losses. Short-term losses refer to the direct sales lost in the current fiscal year due to customers purchasing counterfeits. The medium-term loss component anticipates a snowball effect, where counterfeiters imitate each other, leading to a potential increase in counterfeiting over time. However, internal documents indicate that the snowball effect, as described by Fuchs & Zhou (2010), is currently not considered. While interviewee 3 and 4 both acknowledge the difficulty of measuring its impact, excluding it from the initial estimation might be a reasonable approach. Excluding the snowball effect simplifies the calculation, but it is important to recognize that it likely leads to an underestimation of the true cost.

In practice, quantifying losses can be achieved by collecting data on counterfeit listings publicly available on third-party platforms. This data, according to interview 3 and 4, can then be used to estimate the profits the original brand could have earned if the counterfeiters were licensed trademark holders. This method could be considered conservative since it assumes the original brand only retains some profit, rather than losing the entire value of the sale to the counterfeiters. Internal documents from takedown providers suggest that a typical trademark license fee would generate around 5% of the counterfeiters' revenue for the original brand. These documents also highlight a challenge, namely that many platforms which host counterfeit listings do not track sales or revenues, making accurate loss estimation difficult. However, as the project aims to provide brand professionals with usable reporting tools, even if not perfectly precise, a slight underestimation of losses might be an acceptable trade-off in the initial phase.

4.3.8 Conversion rate

Calculating the return on investment for the brand protection program requires estimating the program's cost savings. A key factor in this estimation is the conversion rate, which reflects the number of potential counterfeit buyers who will be converted into customers of the original brand. Section 4.2.1 *Number of unique customers*, clarifies the difference between potential customers of the original brand and total number of buyers of the counterfeit. In that section, the factors regarding price difference and lack of extra utility from the original brand have already been taken into account. Therefore, these variables will not be included separately in the conversion rate calculation.

The conversion rate represents the percentage of potential customers the original brand can realistically convert into actual buyers within the next time frame. This thesis identified two key reasons why not all potential buyers choose the original brand. First, deleting a single counterfeit listing does not guarantee the absence of others. This is supported by interview 1, 3, and 4, who all highlighted the near impossibility of eliminating all counterfeiters from a market. Furthermore, interviewee 1 argued that there will probably be new counterfeiters joining the market in the upcoming time frame and therefore, it could be assumed that some of the potential customers will choose these counterfeiters as well.

A critical assumption underlying the calculation of return on investment in this context pertains to the stability of the number of unique customers (n) across consecutive timeframes. While the specific customer set might fluctuate due to market saturation in certain industries, the overall size (n) is assumed to remain relatively constant. This assumption allows for the application of the conversion rate to the total cost of counterfeiting, effectively estimating the program's cost savings. Dividing these estimated savings by the total brand protection program cost yields the return on investment.

Estimating the conversion rate accurately presents a significant challenge. One potential approach involves utilizing historical data on the number of unique customers (n) and new customer acquisition rates. However, the uncertainty associated with attributing the origin of new customers introduces a potentially high margin of error into this variable. Despite this limitation, it is important to acknowledge that the conversion rate will inherently fall within a range of 0 to 1. Building upon the technique used in the expert damage reports introduced by interviewee 5, a low, medium, and high value for the conversion rate can be calculated. The low value would represent a conservative minimum estimate for the brand protection program's return on investment.

5. Discussion

This section discusses fluctuations in brand protection programs and highlights the limitations of the equations. Managerial implications are also presented.

5.1 Fluctuations in brand protection

From the internal documents, two phases have been identified when initiating a brand protection program. The pattern shown in these documents has been supported by interview 3 and 4 who argue that this is the regular pattern. During the first few months, there is a cleanup phase where a large number of takedowns are made. In this phase, you could assume the return on investment calculated through *Equation 3* will be high. This is because the estimated number of unique customers will be relatively high, especially if the estimation method uses historical data. After some months, the program will transition into a steady state where takedowns stabilize, and the results will be more modest.

Furthermore, a pattern identified during the analysis of internal documents is that the number of takedowns per month oscillates around a mean value once the steady state is reached. This pattern could be assumed to persist even when using return on investment, calculated through *Equation 3*, as a tool for resource allocation in brand protection programs. This assumption is connected to the fact that brand protection programs are associated with diminishing returns, as demonstrated by Deméré et al. (2022) in their comparison of anti-counterfeiting efforts to the cost of quality framework. This means, allocating more resources to brand protection will not always yield proportionally greater benefits.

Over time, the return on investment of the brand protection program may fall below a predefined target due to diminishing returns. This could lead managers to decrease resource allocation, which might initially see a rise in the return on investment. Two factors contribute to this phenomenon. First, diminishing returns can set in, where additional brand protection efforts yield less and less benefit. Second, the effects of brand protection initiatives are often delayed. Measures taken today may significantly impact counterfeits for several years. However, this creates a cycle of oscillating resource allocation. By understanding this limitation, managers can avoid overreacting to short-term fluctuations in return on investment and make more strategic resource allocation decisions.

5.2 Limitation of the Equations

Beyond the limitations associated with individual variables discussed earlier, the chosen methodology introduces additional considerations for the overall equation. One limitation concerns the equation's assumption that customer loss directly equates to brand value degradation. Scenarios exist where a brand's value might decline without a direct loss of customers. This could occur when the brand perception shifts from overwhelmingly positive to simply positive or

neutral. While such a shift might not trigger customers to abandon the original brand, it still represents a degradation in brand value.

Furthermore, the equation inherently possesses limitations in its generalizability. By design, it focuses on a single product at a time, neglecting the potential for variations in customer base, pricing strategies, and loyalty across a firm's diverse product portfolio. This limitation poses a significant challenge for companies battling counterfeit issues across multiple products. The extensive research required to establish these variables for each product can become a substantial financial investment.

Moreover, in cases where the original firm produces a high variety of products, *Equation 1* and *Equation 2* might need to be calculated individually per product. This is since there are probably differences in the information diffusion models and the cost of acquiring a customer could vary between products. Moreover, in *Equation 3* it might become difficult to calculate the return on investment of the brand protection program per product since, as discussed above, it would be difficult to allocate all brand protection costs to single products. One solution to this could be to sum the results from *Equation 2* for all products and then apply that result in *Equation 3*. In this way, the return on investment of the entire brand protection program could be calculated even though there are big differences between the products.

Furthermore, the equations presented in this thesis lack a discounting component, which might be necessary due to the time-dependent nature of the effects. Litigation costs, for instance, might only be included in the brand protection program cost variable for the first year. However, winning a counterfeit case can strengthen the brand's legal position for multiple years, yielding positive effects beyond the initial measurement period. Similarly, information diffusion and customer acquisition can be slow processes. Customers might convert and become loyal brand advocates long after the initial investment in brand protection efforts. Reputation takes time to build, and depending on the complexity of information diffusion, it might take several years for positive effects to fully materialize. Discounting accounts for the time value of money, recognizing that a dollar today is worth more than a dollar received in the future. By incorporating a discount rate, the equations can provide a more accurate picture of the long-term impact of brand protection investments.

Finally, it is important to acknowledge a limitation concerning the assumed unidirectional impact on brand value. The equation assumes that counterfeits solely contribute to brand value degradation. However, certain scenarios might exist where counterfeits could potentially enhance brand value through mechanisms like increased brand awareness or unintended product desirability. While this possibility exists, it is crucial to consider potential downsides associated with such brand value increase through counterfeiting, such as a dilution of brand image or association with lower-quality products.

5.3 Managerial implications

This thesis argues, along with Wilson et al. (2022), that justifying brand protection program spending remains challenging despite the massive scale of counterfeiting, estimated at \$464 billion in 2019 by Shepherd et al. (2023). Interview 1 and 2 highlight a key reason for this difficulty, namely measuring the program's impact and effectiveness is complex. Therefore, developing a reliable method for calculating the return on investment of brand protection programs is crucial. In the long run, this could lead to a significant decrease in the overall number of counterfeits produced by optimizing resource allocation for brand protection programs.

The authors of this paper advocate using return on investment measurement to optimize resource allocation within the organization. By comparing the return on investment of the brand protection program to a predefined target for return on investment for the organization, managers can decide whether to allocate more resources to the program. A higher return on investment for brand protection compared to the overall target suggests it might be beneficial to invest more resources in this area.

Furthermore, *Equation 2* can help emphasize the proportion of the overall problem caused by counterfeiting to the rest of the organization. By considering both the direct costs from lost sales due to counterfeits and the indirect costs associated with brand degradation due to counterfeits, *Equation 2* provides a more comprehensive picture of the total cost the organization is facing.

6. Conclusions

This thesis has explored the degradation of brand value due to counterfeiting, emphasizing the critical need for more accurate brand protection measurements. Counterfeiting poses significant challenges to brands by eroding consumer trust, diminishing brand equity, and causing substantial financial losses. Counterfeiting is a growing problem facilitated by the growth of e-commerce, which has enabled global reach. Given the explosive growth of e-commerce and online shopping, there are no signs of this problem slowing down anytime soon. This necessitates a strategic approach to quantifying the potential damage counterfeits can inflict on brands. The equations proposed in this thesis for estimating brand value degradation, total costs due to counterfeits, and return on investment for brand protection programs attempts to address this issue and provide credible estimates for brand professionals.

The research has identified key variables that influence brand value degradation due to counterfeiting, including the number of unique customers buying counterfeits, the percentage of deceived and unsatisfied customers, information diffusion, exposures required for attitude change, customer acquisition cost, and the cost of the brand protection program. These variables form the foundation for the proposed equations, enabling brand managers to quantify the economic harm inflicted by counterfeits and justify investments in brand protection programs. This approach departs from current methods by circumventing the need for precise measurements of current brand value. Instead, it focuses on quantifying the number of customers lost due to counterfeiters deceiving customers into purchasing products, leading to dissatisfaction.

While this thesis provides equations for assessing brand value degradation and the return on investment of brand protection programs, several limitations highlight opportunities for future research. Firstly, future studies should evaluate specific activities within brand protection programs, such as market monitoring, consumer education, and legal actions, to identify which yield the highest return on investment. This granular approach will enable more effective resource allocation and optimization of brand protection programs. Secondly, while important factors affecting return on investment have been identified, their relative impact has not been quantified. Future research should employ statistical and econometric methods to determine the weight of each variable in the overall equation. This would enhance the precision of the framework and allow for more tailored strategies. Thirdly, the variables identified in this thesis represent a starting point for understanding brand value degradation due to counterfeits. Future research can build upon this foundation by exploring additional factors that might influence this.

Additionally, although this thesis equips brand professionals with an equation to report losses due to counterfeiting, it does not address how these results should be presented to management. Future research should explore effective communication tools, such as dashboards and visualizations, to make data more accessible and actionable for decision makers. Moreover, the thesis provides a general equation for calculating return on investment without considering individual products. Future studies should adapt this equation to assess return on investment at the product level, analyzing how counterfeiting affects different product categories and tailoring protection measures accordingly. Another adaptation could be to include a discounting variable. This would account for how factors like information diffusion materialize over long periods.

In conclusion, the development of comprehensive, adaptable brand protection programs is imperative for brands to mitigate the adverse effects of counterfeiting and ensure their long-term sustainability and profitability. By leveraging the insights and methodologies proposed in this thesis, brand managers can more effectively protect their brands against the threat of counterfeiting, preserving brand integrity and maintaining consumer trust. It allows for brand professionals to provide management with credible estimates of brand value degradation, enabling the efficient allocation of resources towards brand protection programs.

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