# BRAND STRATEGY AND BUSINESS PERFORMANCE: HOW DOES LOGO CHANGES AFFECT SALES AND STOCK PRICES?

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## Abstract

Branding strategy influences business performance significantly. This paper investigates how logo changes affect the sales and stock price. Previous research has focused on the importance of logo design. However, none have analyzed empirical data on actual companies that can be utilized to further interpret the real-world implications of existing restaurant brands. A quantitative, statistical analysis employing an ANOVA, Mann-Kendall, and a correlational test was conducted to determine whether a logo change had a particularly significant change, trend, and pattern on a restaurant brand's stock price and revenue sales. Furthermore, company logos were categorized between logotypes (text) and combination marks (symbolism and text) to determine whether different types of logos have alternative effects. Results showed that a logo redesign didn't have a significant effect on the stock price. However, there was a significant change in revenue sales after a logo change for certain companies after ~1-2 years with logotypes typically having more success.

## Keywords

Brand Strategy; Logo Types and Change; Minimalism; Business Performance

## 1. Introduction

American Marketing Association (AMA) defines the logo as "name, term, sign, symbol or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of other sellers". With this, logos frequently include textual and/or visual design elements that are descriptive of the type of product/service that brands market (Luffarelli, Mukesh, Mahmood 2019). Visual cues can draw consumers' attention effectively. Likewise, logos can easily grab consumers' attention and later immediately remind them of a particular firm (Alfonso and Janiszewski 2023*)*.

A logo design can provide a significant impact on a company by providing a visual representation of that brand (Müller, Kocher, Crettaz 2013). Typically, a brand logo can be utilized to promote key factors for a company such as increasing brand awareness, differentiating from competitors, and improving perception from consumers (Andrew and Shimp 2018*)*. In order to utilize these factors, companies commonly redesign their logo in hopes of benefiting the brand by changing certain design elements such as color, complexity, spacing, and shape. Typically, a particularly old, neglected brand may lack a positive consumer relationship; this is not due to a brand's lack of quality, but because they appear relatively older compared to newer, more modern brands (Alfonso and Janiszewski 2023). Therefore, brands intend to rebrand to appear more modernized. However, the implementation of a new logo redesign may not always be successful. As logos provide a central visual interpretation of a brand, brands need logo changes relevant to current consumer trends to develop brand relationships. Therefore, the understanding of the current design trends, consumer perceptions, and technological changes as well as the development of a plausible brand logo with appropriate design elements that satisfy those elements are highly determinant and important towards the success of a company.

Regarding the current logo design trend of brands, simplifying logo designs has developed a heightening popularity in recent years. The simplification of a logo design is "returning to the simplest shape" and removing "all unnecessary design" (Bossel, Geyskens, Goukens 2018). More brands are adopting this trend by removing

major design features due to certain factors in order to appear more easily recognizable and user-friendly. However, the increase in brand logo simplification has caused increased controversy as "minimalism is often criticized by critics as a mechanical, ruthless, and simple design". A potentially oversimplified logo redesign that was recently changed may have uncertain effects regarding the stock price and revenue sales of a company.

Specifically, restaurant brands are committing to the trend of simplifying logos as well. A logo design is highly important for a restaurant brand as "factors such as product size, product shape, and product labels [including logo designs] have been repeatedly found to significantly alter food intake" (Bossel et al. 2018). Therefore, observing the trend of simplified logo design amongst food brands is highly necessary towards understanding its effects on stock price and revenue sales of a restaurant company. However, a significant gap remains regarding the effects of the simplification trend on brand logos in general due to its recent insurgence (Keller and Swaminathan 2020). Furthermore, no scholarly works have addressed the effects of minimalized logo change on market sales of restaurant brands. This study intends to observe how the current trend of simplifying logos of restaurant brands between 2017-2022 affects the stock price and revenue sales and determine how successful this trend is.

## 2. Literature Review

### 2.1 Logo Redesigns
Research on logo design has been steadily doing. Kim and Lim (2019) did an extensive, systematic review of one hundred twenty-four business journals which portrays the importance of a logo design, redesign, and its design elements influence the economic outcomes of a brand. It emphasizes the influence of logos affecting awareness and perception of a brand's personality. Importantly, a brand logo can invoke a significant effect in relation to the market as "a well-designed logo can result in a better market behavior such as increasing market shares and improved financial performance". Furthermore, the different forms of logos can appear such as through objects, text (also referred to as logotype), or a combination of both. A logo shape, logotype, and color are basic design elements that are also highly important to consider. Logo redesigns are highly common; deeply analyzing and understanding the strategic directions of a brand is highly important in determining a successful logo redesign.

Also, descriptive logos (visual reference of the product) are more influential amongst consumers and have improved brand performance than non-descriptive logos (no visual indication of the product) (Luffarelli, Stamatogiannakis, Yang 2019). It shows the effect on net sales of having descriptive or nondescriptive logos and discovered that a descriptive logo has a greater positive effect on sales than nondescriptive one" which demonstrates the various effects that different types of logos have.

### 2.2 Minimalism
The term "minimalism" first appeared in the 1965 American theorist Charlie Wuheim's "Minnimal Art". Minimalism aims to pursue simple beauty and advocate the design method of "making complexity to simplicity" (Fan 2019). One of the important features of Western minimalism style works is the simplicity of design language, by conducting visual transformation with a complete volume, unlike the surrounding objects, which gives a visual impact. Fan (2019) analyzes how minimalism has been applied to logos during the upcoming trend. He mentions that minimalism is rooted in the concept of "less is more" which is fulfilled by removing excessive decoration, reducing redundancy, and focusing on the most basic aspects. Fan references a distinct example, Nike, by describing how its signature logo is simple but concise which can be easily memorable. Minimalism also highly influences colors as it is described to have a distinct style of being singular, bright, and clear. Logotype, logos that are primarily text, also poses as concise and delicate when minimalistic. Specifically, Fan highlights Apple's logo change as a notable effect of minimalism as the logo transitioned from a highly detailed visual of Isaac Newton under an Apple true to a flattened, simple shape of an apple. Fan persuades that it "meets the emotional and psychological needs of consumers" as well as mentions that it is "easy for the public to remember".

Another study analyzes the recognizability of the Apple logo through its minimalistic features and how it impacts brand perception and exposure (Iancu 2017). She elaborates that the usage of minimalism can be utilized to increase recognition as intended by Apple. For the first experiment, participants were required to draw Apple's brand logo and rate their confidence and accuracy in the drawing. Also, they were told to choose the correct Apple Logo from an array of multiple varied interpretations of Apple Logos with slightly changed design elements. Iancu discovered that "there [was] an unexpectedly high number of respondents that remember many features of the logo". However, only a few individuals fully recognize the entire logo correctly. Overall, the prospects of minimalism within the Apple logo resulted in "the probability to recall features of the original logo increases", but fully recalling the Apple logo with all the correct features from memory is significantly less likely. Ultimately, simplifying logo designs can have certain effects on a brand.

### 2.3 The Effect of Minimalism on Food Brands
A scholarly research article highlights the importance of brand logos on food intake (Bossel et al 2018). It assesses the trend of brand simplification and its relevance to food brands. The different effects of simple and complex logo

designs are also analyzed and then conducts an experiment in which participants participate in a taste test; the subjects were provided with a simple logo, a complex logo, or no logo. It is concluded that consumers have a more relative interest in brands featuring a flat, simple logo. Ultimately, "simplicity can lead to differential outcomes" which justifies the relevance of logo design towards food brands, including restaurants. Furthermore, certain design factors have significant contributions.

### *2.4 Gap*

Though there is extensive research regarding the effectiveness of logo design on brands, there is limited research regarding the effectiveness of the current trend of simplistic logo redesigns amongst restaurant brands as well as determining which type of logo is the most effective. It is important to assess the different design elements as "little is known regarding how various logo elements influence consumers perceptions" (Kim and Lim 2019). Furthermore, only a few studies have assessed the presence of minimalism within logos and analyzed real examples (such as the study of Apple's minimalistic logo), but more minimalistic logos need to be analyzed as "by increasing the number of analyzed logos, the relevance of minimalism in marketing, especially for a marketing specialist and logo designers, can be more comprehensively assessed" (Iancu 2019).

Additionally, no study has invested in analyzing simplification specifically within restaurant brands. Though the aforementioned study on food brands regards the relevance of simplifying logo designs, the experiment only analyzes a singular, made-up logo as the researcher themselves suggest to "test a wider variety of brand logos, and thus gain insights into which logo characteristics have the strongest effect" (Bossel et al 2019). Since logo redesigns are suggested to affect food intake, restaurant brands are an important focus. The success of a redesign would be determined through the analysis on stock price and market sales before and after the change. This method is justifiable as "the existing findings in the logo literature are mainly based on surveys or controlled lab-experiment data"; therefore, there is a need for "more systematic…empirical research to improve the generalizability of research findings" (Kim and Lim 2019). Since systematic research is needed, a quantitative, statistical analysis method for determining a restaurant brand's success would be appropriate as it is based upon already set, factual data. Overall, the analysis of stock price and sales after a logo redesign of restaurant brands is vital for understanding the recent effects of simplifying logos between 2017-2022 and assessing which type of logo is most optimal.

# 3. Methodology

### *3.1 Data Collection*

As the purpose of this study is to understand the effect of simplistic logo changes on stock price and revenue sales, a quantitative, statistical analysis would best be suitable for interpreting the data. Since the effect of the modern trend of simplified logo design in regard to restaurant brands has rarely been assessed, this methodology fulfills the purpose of collecting sufficient data on real companies to interpret the resulting effect of redesigns as well as determine the most suitable type of logo change for a restaurant brand. As the effect of logo redesigns on market sales is being assessed, data before and after the logo change need to be analyzed in order to determine a certain trend. Primarily, the change in revenue sales and the stock price will be analyzed as these two variables are most common and easily accessible amongst most brands.

This research uses *Macrotrends.net*, a research platform and stock screener that provides informational graphs of quarterly financials, revenue, assets, and other metrics of companies over the past years. Since *Macrotrends* accounts for 10+ years of recorded data, the website is highly suitable for the timeframe of this project (2017-2022). Other sources of data are often inaccessible since many data providers are only business-to-business or restricted by payment. Therefore, *Macrotrends* fit the purpose of the research to measure the change in a company's stock price and sales. Furthermore, other websites such as *Investing.com and* sec.org (SEC Filings) were used in order to acquire stocks or revenue sales that weren't acquirable through *Macrotrends.net*.

### *3.2 Logotypes & Combination Marks*

Specifically, each restaurant brand would feature a different type of logo such as a logotype (a logo that primarily focuses on text) and a combination mark (a logo that primarily focuses on symbolism and text). Accounting for the different types of design changes is highly necessary. A previous study conducted by the *Harvard Business Review* determined the effects between logos with visual design elements related to the product (descriptive) and logos without design elements related to the product (nondescriptive) and the change in market sales as a result (Luffarelli, Stamatogiannakis, Yang 2019). Similarly, this study primarily focuses on two different types of logos: logotypes and combination marks. The stock price and sales will be analyzed to determine the various effects it could have on different types of logos (such as typographic logos, abstract logos, and a combination of both). Also, Kim and Lim (2019) suggested the combination type as the best possible use of visual representation forms" which proves the various effects of different types of logos. Therefore, interpreting the differences between certain types of logos is immensely important.

### 3.3 Restaurant Brands

In order to properly account for the various simplistic logo changes, nine particular restaurant brands with a simplistic logo change would be chosen. Therefore, Papa John's, Sweetgreen, Kura Sushi, El Pollo Loco, Dunkin', Noodles & Company, Burger King, Popeyes, and Tim Hortons were the brands chosen for this research project. The reasoning for selecting ultimately relies on these logo design characteristics. For example, El Pollo Loco and Dunkin' were chosen to understand the effects of the removal of pictorial imagery as it transitions from a combination mark to a logotype. Companies using logotypes (as shown in **Figure 1**) were chosen to understand the effects of redesigning a logo focused on text. The Burger King, Noodles & Co., and Kura Sushi companies' logo was primarily chosen due to the change in the symbolism of the logo. Overall, each brand accounts for a certain type of logo. By addressing every scenario, the results of each logo can be compared in order to determine which change was the most successful for a restaurant. By understanding which change was most successful, restaurant brands in the future can interpret the best possible outcome when choosing or rebranding a certain logo. Every observed restaurant brand is displayed in **Figure 1**.



**Figure 1**

### 3.4 Statistical Analysis

After obtaining all data, a statistical analysis will be employed. Firstly, an ANOVA analysis was employed in order to determine if there is a statistically significant difference between the mean average stock price or revenue sales before and after a logo change. Furthermore, a Mann-Kendall test will be used to determine the presence of a statistically significant trend in stock price or revenue sales after a logo change for each company. Finally, a correlational analysis is conducted in order to determine whether certain companies have similar patterns in stock price or revenue sales after a logo change. A correlation matrix between companies' stock prices and sales was developed to detect which companies would have similar patterns.

## 4. Results

### 4.1 Stock Market

The stock prices of Papa Johns, Sweetgreen, Kura Sushi, El Pollo Loco, Dunkin', and Noodles & Company were primarily analyzed. Burger King, Popeyes, and Tim Hortons were not included in the stock market analysis as their stock is inaccessible due to their parent company. For each brand, the stock price is documented from the first introduction of the logo change to the current as shown in **Figure 2**.

| Days | Papa Johns | | | Sweetgreen | | | Kura Sushi | | |
|---|---|---|---|---|---|---|---|---|---|
| | Date | Close | Change | Date | Close | Change | Data | Close | Change |
| 1 | 2021-11-15 | 128.6248 | | 2022-05-25 | 19.67 | | 2020-01-22 | 22.76 | |
| 2 | 2021-11-16 | 127.1596 | -1.14% | 2022-05-26 | 18.89 | -3.97% | 2020-01-23 | 22.96 | 0.88% |
| 3 | 2021-11-17 | 127.4841 | 0.26% | 2022-05-27 | 18.35 | -2.86% | 2020-01-24 | 23.1 | 0.61% |
| 4 | 2021-11-18 | 129.5885 | 1.65% | 2022-05-31 | 18.28 | -0.38% | 2020-01-27 | 23.48 | 1.65% |
| 5 | 2021-11-19 | 130.8473 | 0.97% | 2022-06-01 | 17.67 | -3.34% | 2020-01-28 | 24.04 | 2.39% |
| 6 | 2021-11-22 | 128.3298 | -1.92% | 2022-06-02 | 18.21 | 3.06% | 2020-01-29 | 23.02 | -4.24% |
| 7 | 2021-11-23 | 128.3495 | 0.02% | 2022-06-03 | 17.32 | -4.89% | 2020-01-30 | 22.75 | -1.17% |
| 8 | 2021-11-24 | 131.6143 | 2.54% | 2022-06-06 | 16.53 | -4.56% | 2020-01-31 | 22.52 | -1.01% |
| 9 | 2021-11-26 | 126.6974 | -3.74% | 2022-06-07 | 16.42 | -0.67% | 2020-02-03 | 22.96 | 1.95% |
| 10 | 2021-11-29 | 124.1112 | -2.04% | 2022-06-08 | 16.29 | -0.79% | 2020-02-04 | 22.94 | -0.09% |
| 11 | 2021-11-30 | 119.8925 | -3.40% | 2022-06-09 | 15.89 | -2.46% | 2020-02-05 | 23.47 | 2.31% |
| 12 | 2021-12-01 | 118.1224 | -1.48% | 2022-06-10 | 15.02 | -5.48% | 2020-02-06 | 22.71 | -3.24% |
| 13 | 2021-12-02 | 122.9901 | 4.12% | 2022-06-13 | 14.11 | -6.06% | 2020-02-07 | 22.88 | 0.75% |
| 14 | 2021-12-03 | 122.2231 | -0.62% | 2022-06-14 | 13.36 | -5.32% | 2020-02-10 | 22.77 | -0.48% |
| 15 | 2021-12-06 | 126.1271 | 3.19% | 2022-06-15 | 13.74 | 2.84% | 2020-02-11 | 22.77 | 0.00% |
| 16 | 2021-12-07 | 128.6642 | 2.01% | 2022-06-16 | 11.91 | -13.32% | 2020-02-12 | 22.62 | -0.66% |

**Figure 2**

The ANOVA analysis would compare the mean average stock price around the month before and the month after the logo redesign. The ANOVA test returns a p-value for each company as shown in **Table 1**.

|  | **Directly After** | **6 Months After** | **1 year after** |
|---|---|---|---|
| Papa Johns | $8.00 \times 10^{-6}$ | 0 | 0 |
| Sweetgreen | $3.55 \times 10^{-15}$ | $4.89 \times 10^{-9}$ | |
| Kura Sushi | $1.5 \times 10^{-11}$ | 0 | 0.19 |
| El Pollo Loco | 0 | 0 | 0 |
| Dunkin' | $2.04 \times 10^{-7}$ | 0 | 0 |
| Noodles & Co. | $1.82 \times 10^{-5}$ | $4.69 \times 10^{-8}$ | 0 |

For the p-values under 0.05 (as indicated in light green), there is a statistically significant difference in stock price before and directly after a logo redesign. As most p-values are below 0.05, the stock price significantly changed directly after a logo redesign. After a year, most brands, besides Kura Sushi, showed a difference in stock price since the initial redesign.

In order to accurately interpret the correlation between each brand in terms of the stock market, a table would be constructed which would display the correlation of stock price compared to each brand in order to note whether there is a general trend in their logo change affecting their stock price. **Table 2** refers to the correlation of similar stock market trends for each brand.

## Correlation (~1 Year After)

|  | Papa Johns | SweetGreen | Kura Sushi | El Pollo Loco | Dunkin' | Noddles & Co |
|---|---|---|---|---|---|---|
| Papa Johns | 1 | | | | | |
| SweetGreen | | 1 | | | | |
| Kura Sushi | -0.11 | | 1 | | | |
| El Pollo Loco | -0.06 | | 0.22 | 1 | | |
| Dunkin' | 0.05 | | -0.06 | -0.40 | 1 | |
| Noddles & Co | 0.11 | | 0.05 | 0.13 | -0.10 | 1 |

**Table 2**

The multiple different tables refer to different time intervals regarding how similar two certain brands' stock markets reacted directly after, six months after, and one year after their logo changes. Overall, most brands have a relatively low correlation, implying that not every brand's stock price has the same response to a logo redesign. However, there is one unique occurrence as El Pollo Loco and Dunkin have a medium-strength correlation. Both of these brands' redesigns transition from a combination mark to a logotype.

### 4.2 Revenue Sales

Primarily, the revenue sales of Kura Sushi, El Pollo Loco, Dunkin', Burger King, Popeyes, and Tim Hortons were assessed. Similarly to the stock price analysis, the revenue sales data were documented between the time the brand logo was introduced to now and is compared to the revenue sales before the redesign. An ANOVA analysis was conducted to determine whether there is a significant difference in revenue sales before and after a logo redesign. The results of the test are shown in **Table 3**.

|  | 1 Year After | 1.5 Years After | 2 years after |
|---|---|---|---|
| Kura Sushi | 0.31 | | |
| El Pollo Loco | 0.38 | 0.24 | 0.11 |
| Dunkin' | 0.94 | 0.9 | 0.88 |
| Noodles & Co. | 0.23 | 0.09 | 0.2 |
| Burger King | 0.89 | 0.22 | 0.03 |
| Popeyes | 0.05 | 0 | 0 |

**Table 3: P-Values of ANOVA test on Revenue Sales**

To elaborate, the average revenue sales in one year before and the average in one year after were compared under the '1 Year After' column. The average for the two years before and the two years after were compared under the '2 Years After' column. Ultimately, the p-values after a logo redesign for every company are above 0.05, indicating no significant change in revenue sales after one year. However, there later is a significant difference for Burger King, Popeyes, and Tim Hortons.

Afterward, a Mann-Kendall analysis was used to detect trends in revenue sales. The returned p-values are shown in **Table 4**.

|  | 1 Year After | 1.5 Years After | 2 years after |
|---|---|---|---|
| Kura Sushi | 0.73 | 0.37 | 0 |
| El Pollo Loco | 0.3 | 0.54 | 0.37 |
| Dunkin' | 0.73 | 1 | |
| Noodles & Co. | 0.09 | 0.71 | 0.11 |
| Burger King | 0.73 | 0.06 | |
| Popeyes | 0.31 | 0.26 | 0.02 |

|  | 2.25 Years After |
|---|---|
| Burger King | 0.02 |

**Table 4: P-Values of Mann-Kendall test on Revenue Sales**

There was no immediate significant trend as indicated by the p-values above 0.05 after a year. However, Burger King, Popeyes, Tim Hortons, and Kura Sushi all showed a positive trend which coincides with the results

from the ANOVA analysis. Though Tim Hortons had a positive trend after two years; however, there is no significant trend after three years. Burger King specifically showed a positive trend 2.25 years afterward. Kura Sushi and Tim Hortons had a significant, positive trend after three years.

Finally, a correlation analysis was conducted in order to determine which companies have similar trends in revenue sales which is presented in **Table 5**.

## Correlation (Revenue Sales Change After Logo Change)

| | Kura Sushi | El Pollo Loco | Dunkin' | Noddles & Co | Burger King | Popeyes | Tim Hortons |
|---|---|---|---|---|---|---|---|
| **Kura Sushi** | 1 | | | | | | |
| **El Pollo Loco** | -0.39 | 1 | | | | | |
| **Dunkin'** | -0.30 | 0.94 | 1 | | | | |
| **Noddles & Co** | 0.25 | -0.03 | 0.09 | 1 | | | |
| **Burger King** | 0.38 | 0.21 | 0.27 | -0.09 | 1 | | |
| **Popeyes** | -0.92 | 0.26 | 0.19 | -0.20 | -0.69 | 1 | |
| **Tim Hortons** | 0.25 | 0.06 | 0.22 | -0.10 | 0.22 | 0.06 | 1 |

**Table 5**

Though most correlations have relatively weak strength, the correlation revenue sales between each brand are generally higher compared to stock market analysis. Kura Sushi has a medium-strength correlation with El Pollo Loco, Dunkin', and Burger King. Furthermore, there are three instances of a strong correlation as indicated in the purple cells in **Table 5**. The strongest correlation for revenue sales is also El Pollo Loco and Dunkin'.

## 5. Discussion

### 5.1 Business Performances

As the ANOVA results indicate a significant change in stock price directly after a logo change, it may not necessarily imply that the logo redesign was a significant factor. Companies take time to roll out new branding. Particularly, a study regarding stock market prediction proved that it takes time for the market to adjust itself to the new incoming information (Nikfarjam 2010). This implies that the stock price should have a significant adjustment only later. Therefore, the stock price having a statistically significant change immediately after a logo redesign implies there are other variables that are affecting the brand's stock price. Since stock prices are constantly changing due to other possible factors, a logo redesign does not have a significant effect on a restaurant brand's stock price.

In terms of the time lag between a logo redesign and financial outcome, the results of revenue sales appear more probable. The ANOVA test results suggest there was no significant difference in sales directly after a redesign. However, Burger King, Popeyes, and Tim Hortons then showed a significant difference in revenue sales two years after the logo change. Therefore, there is a more realistic time delay in financial impact since rebrands usually take time which implies that a logo redesign could potentially have an effect in the long term. Furthermore, the Mann-Kendall similarly returned a positive trend for Burger King, Popeyes, and Tim Hortons for the long term which coincides with the results of the ANOVA test. This strengthens the idea of a logo redesign having an effect on revenue sales in the long run for these restaurant brands. Interestingly, Tim Hortons has a detected positive trend in sales after two years, but there is no trend after three years. Possibly, the effect of a logo redesign on revenue sales may wear off after a certain period of time. Besides these three brands, however, most other restaurant brands (that aren't logotypes) didn't have a significant difference in sales.

### 5.2 Logotype vs. Combination Mark

As indicated earlier, this study categorizes the brand logos between logotypes (text), combination marks (text and symbolism), and the transition from a combination mark to a logotype. Particularly, logotypes (Popeyes and Tim Hortons) tend to be more affected in terms of revenue sales in the long term. Furthermore, an interesting factor is the amount of change in the redesign. Compared to other brands, both Popeyes and Tim Hortons had relatively simpler redesigns with only slight changes in color shades or font. Even with these minor changes, the simple redesigns seemed to have the most impact on revenue sales for Popeyes and Tim Hortons. Therefore, companies with particularly a logotype redesign may experience the most benefit, especially with primarily minor adjustments.

Most brands generally have different patterns due to the low correlation for both stock price and revenue sales. Though it is concluded that a brand logo redesign doesn't have a significant effect on stock price, there are still common patterns amongst certain companies. Particularly, Dunkin' and El Pollo Loco consistently had the strongest correlation throughout the year. Furthermore, they are the two specific brands that primarily transition from a combination mark to a logotype as the redesign involves the removal of all pictorial imagery. This could imply that companies that also remove imagery may have similar effects.

### 5.3 Implications

As this study is primarily set on analyzing real-world companies, the effective usage of a logo design on real restaurant brands and its general impact is an emphasized focus, especially with the recent trend of simplifying logos. The research process is designed to account for the significant impact on actual restaurants, unlike other studies within this research field. As previous research has suggested how a brand's image, especially a logo's simplicity, can have altering effects on food intake, understanding these significant impacts on these restaurants is highly important (Bossel et al 2018). Particularly, Popeyes and Tim Horton's positive trend in revenue sales for the long term could also indicate an increase in food intake. This further implies that other companies using logotypes like Popeyes and Tim Hortons could show similar results. On the other hand, most other brands that don't use logotypes had no significant effect. Ultimately, this proves the importance that a simplified logo redesign can have on real-world factors and the necessity to observe these results in order to provide the best approach for a simplified logo redesign for a restaurant brand.

### 5.4 Limitations

This study encountered certain limitations that affected various aspects of the research process. Firstly, there are potentially confounding variables among the collected data of each restaurant brand. These external factors could have happened near the time of the logo change. For example, COVID-19 had a severe impact on restaurant brands and could have affected the stock market and revenue sales near the time of a logo rebrand.

Also, the data on revenue sales from each company was severely limited. Unlike stock market data being reported almost every day, revenue sales are only reported quarterly (every 3 months). Therefore, certain companies such as Papa John's and Sweet Greens had to be removed due to insufficient data since their logo redesigns were fairly recent as too few reporting were documented. The difference in correlation from 30 days, three months, and one year in the stock market analysis couldn't be implemented similarly in the revenue sales analysis as well due to the similar factor of limited data. Therefore, the stock market data had to disregard certain companies during the analysis. In particular, Burger King, Popeyes, and Tim Horton's were not included. As they are owned by a parent brand, Restaurant Brands Inc., only the stock price of that parent company would be visible, not the restaurant companies that are being owned. Therefore, these brands couldn't be analyzed within the stock market analysis.

Further research is also highly encouraged in order to account for the previously mentioned limitations. Increasing the sample size of restaurant companies is highly encouraged as this would provide increased accuracy and credibility. Including a diverse set of restaurant brands with varying backgrounds would be highly representative and provide robust results. Accessing a larger data pool of revenue sales for each brand would prevent the potential of interfering limitations and allows for a more precise analysis. Furthermore, numerous brand logo redesigns focus on certain aspects such as the change in font, color, or both. Categorizing between these types of changes and interpreting which is most successful would provide vital beneficial information for companies to determine the best method for implementing a logo change. Analyzing other variables such as the net income or assets of an income would be beneficial as well.

In conclusion, this study, unlike other scholarly works, utilizes empirical data from real companies to interpret how a logo change can have a significant change in revenue sales. Particularly, logotype redesigns tend to have a successful, positive trend after 2-3 years. However, most other brands utilizing a combination mark logo do not experience similar effects. Therefore, future companies with a text-centered logo should focus on only minor adjustments for the potentially best outcome. Ultimately, this study provides beneficial information for restaurant brands to follow and further encourages future works to explore the potential different types of logos and variables that can affect a restaurant brand and other real-world factors.

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