1. **Introduction:**
   Kreuzburger has been one of the very few authentically Berlin burger chains, catering to middle-to-high income customers. Founded in 1999, the franchise demonstrates healthy growth, continuing to open new restaurant every few years. Currently, there are in total 6 Kreuzburger restaurants distributed in several neighborhoods in Berlin. Aside regular burgers, the restaurant chain is identity-conscious, offering unique options such as bio burger (with organic and morally treated meat), and an extensive vegan menu.

   In this paper, I analyze the financial performance of the food chain, evaluate it, and give financial suggestions to interested investors and the restaurant owner.

Fig 1: One of the store chain, situated in Oranienstrasse.

2. **Assumptions:**
   Due to the lack of detailed information of the performance of the food chain, I assume the following pieces of information:

   a. There is a constant customer traffic of ~11 people every hour (as observed in my visit to the store). The most common order is one burger and one drink, which cost 10 euros in total. Based on my inspection of the traffic shown on Google

Maps, the time I visit (5pm) seems to be the mean of the traffic distribution throughout a typical day. Thus I assume the constant customer traffic.

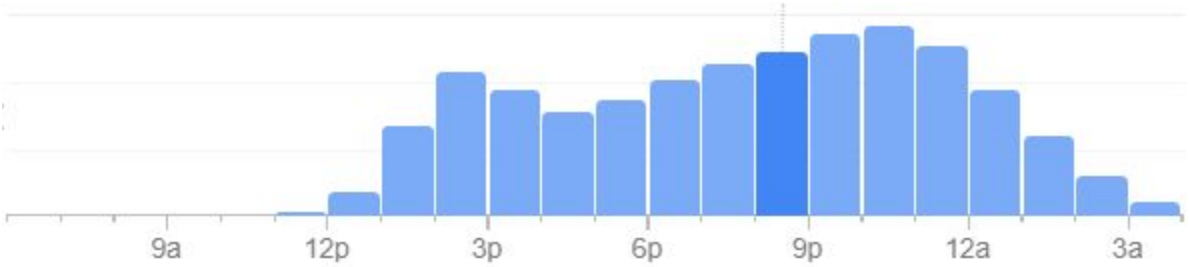

Fig 2: Customer traffic to Kreuzburger restaurant in Oranienstrasse, Berlin throughout the day.

b. The business is comprised 6 restaurants around the city. I also assume all stores open year-round (365 days per year), as well as sharing the same number of employees and customer traffics.
c. I also assume a purchase of equipment 2 years ago, which is depreciated linearly over the next 10 years, thus adding depreciation to the statements.
d. Revenue growth rate, COGS growth rate, and SG&A growth rate are assumed to be 5% in projecting FCF.

3. **Financial Analysis:**
The annual reports of the food chain is available here. A summary of the content is as follow:

- Sheet 1: Basic Info. Contain essential information about the business, such as customer traffic, sales, number of employees, wage, and tax rate. Justifications and resources for these observations and assumptions are available in the spreadsheet.
- Sheet 2: Income Statement. Use the basic info to project revenue, COGS, and SG&A of the business for year end 2018.
- Sheet 3: Cash Flow Statement. Describe the flow of cash in 2018. Use the same basic information as the Income Statement. However, non-cash items such as depreciation are excluded.
- Sheet 4: Balance Sheet. Start with the amount of cash calculated in the cash flow statement. Common ratios to indicate health of the business, such as current ratio and asset-to-equity ratio, are also calculated.
- Sheet 5: FCF. Calculate the free cash flow of the business using the formula using the formula FCF = NOPAT + Depreciation - NWC Change - CapEx. Also project the FCF in the 5-year period 2019-2023
- Sheet 6: DCF. Using the projected FCF and CAPM to calculate the book value of the business.

All formula involved are highlighted in the spreadsheet.

We conduct a common size analysis as a sanity check of our projected information. As seen in sheet 2 (Income Statement), the net margin of the business is 5.36%, corresponding well to the average net margin of the Restaurant/ Dining Industry, according to Damodaran (2018). The Gross margin, on the other hand, seems too high compared to Damodaran's (56% projected compared to Damodaran's 23%). However, according to Wall Street Journal (2018), this gross margin is roughly the same as that of McDonald's (50%). This is because Damodaran's statistics is for the industry as a whole, while apparently burgerhouses seem to enjoy a higher margin.

Dupont analysis shows an abnormal value (over 50%). This is because we do not account for the value of current equipments. However, in the case of small business, this might be believable as we do not need extensive up-front investment in assets to get a restaurant to work. While potentially based on flawed assumptions, the ratio has its merits. The restaurant owner could still use the ratio to evaluate the financial impacts of their decisions. For example, the decision whether buy new equipments or not. While new equipments increase productivity and reduce cost, thus increasing net margin. They also increase assets and thus reduce turnover. If pro forma results do not show any significant improvements in terms of ROA for that decision, maybe the optimal decisions is to stick to the current equipments.

An expanded Dupont Analysis could be performed using information available in the income statement, but deemed unnecessary as we assume the business operate with no long-term debt. An expanded Dupont Analysis is most helpful when a manager needs to evaluate the financial implications and trade-offs in decision-making, driven by the leverage of the company. There are short-term debts, however, such as account payables. But these debts are negligible and thus does not motivate the use of Dupont Analysis. The restaurant we analyze is also not publicly traded, thus we also could not expand Dupont to account for trade-offs in management decisions and the market value of the company.

The sensitivity analysis, as seen below, shows us another aspect of the big picture - the relative importance of variables involved in our calculations. Trailing from top to bottom of each column, we see a significant change in the value of the business. The change in values across columns in each row seems to depend on this set-up. This is because our calculation depends very much on our assumption of the discount rate. Moving further, we choose a moderate discount rate (4%) for this investment because it is potentially risky. The investment would be withheld by the business for several years, thus investors should require a much higher rate of return than a bank's interest rates. The risk is not very high, however, as the business has already demonstrated profitability, as well as sustainability since its start in 1999.

WACC\ PGR	1.00%	1.50%	2.00%

3.00%	$15,674,806.31	$20,513,384.37	$30,190,540.50
4.00%	$10,445,939.55	$12,307,997.90	$15,101,085.42
5.00%	$7,833,607.25	$8,793,676.76	$10,073,769.43

Fig 3: Sensitivity analysis of the NPV

We also notice that the perpetuity growth rate also impacts the NPV of the restaurant, even though its role is somewhat less important than that of the discount rate. Given the slow development of the food industry recently (Griffith, 2017) and the fact that the restaurant still has room for expansion due to its small scale, I choose a perpetual growth rate of 2%.

Using the value determined via the sensitivity analysis, we conduct a DCF to value the business. As seen in Sheet 6 (DCF), a fair value of the business in perpetuity is €15.0M.

NPV of FCF	€1,403,999.99
Terminal Value	€16,614,797.87
NPV with Terminal Value	€15,056,238.14

Fig 4: Net Present Value of free cash flow with and without terminal value.

Essentially, the intuition of the discounted cash flow analysis is that, if we are targeting a certain percentage yield (4% in this case), how much should we pay now knowing the annual growth rate of the free cash flow (in this case, 2% in perpetuity). This is why we use the net present value - to convert any future value of money into present value, as we know that algebraically, all future returns would converge at a terminal value. The NPV of FCF after 5 years (without a terminal value) shows us the fair amount of investment to “own” the restaurant in a 5-year period. Any price below that is a bargain. However, as we believe that the restaurant could potentially be a long-lasting investment (that would not be closed down in 5 years), we need to calculate the NPV of its FCF in perpetuity. The NPV of the FCF in perpetuity, as projected above, shows us that if we would like to pay to own the cash flow (i.e. the restaurant), $15,056,000 is a fair price. Even though the return in the first few years would not be as high as we - the investor - would expect (7%), the return increases each year due to the growth rate (4% in the first 5 years, and 3% thereafter) and eventually would exceed our expected return.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Return/ Investment		2.64%	2.93%	3.25%	3.59%	3.96%

Rate						

Fig 5: Return-over-investment ratio shows the returns rapidly approach the investor's expected discount ratio (4%).

One recommendation to better the store's performance, both strategically and financially, is to well-aware of dynamic consistency. Slack is a potential problem that could arise when the food chain is expanding. When there are many franchises, it is hard to control management quality. Poor management is detrimental to the business's image, which is the main reason the business could retain a loyal traffic of customers. According to my observation, given that the customer traffic per hours (11 customers) is not too high, 3 employees at any time might not be necessary. Instead, one manager, one full time employee, and one part-time employee per 8-hour shift is enough to keep all tasks running smoothly. This change saves the restaurant $300,000 per year and could potentially churn out more efficient employees to be considered for management positions.

4. **Strategic Analysis:**
   Strategically, we evaluate the competitive advantages of the restaurant using Porter's five forces, as well as the opportunity for complementary products.

Fig 6: Porter's five forces illustrated for Kreuzburger. Created based on Casadesus (2014).

Force	Rating	Impact	Reasoning	Recommendation
Threat of new Entry	High	Willingness to pay is lower as customers see more choice. Prices would then be lowered to be competitive. Costs	Opening small restaurants is straightforward. Low up-front investment (rent, inventory, or payroll) is required. Any confident in their cooking skill and having some cash to	Revolve products around an identity to create loyal customers. Kreuzburger already does this by actively voicing their advocacy for leftist movements, which is

		for ingredients might get higher if suppliers see a rise in demand.	cover the fixed costs could start one. Another factor contributing to the low bar of entry is the false optimism, caused by the survivorship bias. In particular, aspiring restaurant owners tend to notice only successful ventures, while the majority of restaurants actually wane quickly due to the same threat.[1]	very timely considering the rise of far-right politics in Germany. We also do not need to be too worried about this threat. Aside from the biases, which make newcomers overly optimistic, premium burger is a niche market, as the product mix is rather narrow. Franchises, such as McDonalds and Burger King, also make the prospective competitions quite intimidating, even though they cater for a different market segment (low-income fast food). Even though past performance does not indicate future's, the restaurant chain has survived the European economic crisis and continue to thrive, which says something about its quality and durability.
Supplier Power	Neutral/ High	Profitability might decrease because costs could get higher	Burger ingredients, such as tomato, meat, and cabbage, are common. So a supplier might not bother decrease the cost as they could always find another restaurant to supply to. Other suppliers might not offer more competitive prices as that could potentially drive down the whole ingredient market.	If the restaurant chain is more established (e.g. more popular), they could have much more advantage and could drive down this threat. Thus, investment in marketing would be very helpful.
Buyer Power	Neutral/ High	Profitability might decrease because	Due to the availability of internet, customers could	Increase online presence and do regular analytics to

[1] #biasidentification: Analyze a threat using knowledge of biases. Factor this bias in recommended course of actions for the company.

		prices must decrease to respond to higher bargaining power of customers	easily check and compare prices among restaurants. If we set prices too much higher than the quality of our food, customers could simply choose another restaurant.	find optimal price to offer to customers. This threat is not too serious as the restaurant has built an identity that resonate with customers of the area. Thus, our customers are naturally more loyal.
Threat of substitutes	Low	Willingness to pay is higher, so the restaurant could increase their price	An alternative to eating in restaurants is to prepare one's own foods. This is time-consuming and thus not very preferable if someone is employed and is pay an above average salary.	There is nothing to worry about this threat. However, being aware of changes (such as the rise of substitute products) contributes a lot to the restaurant's dynamic consistency.
Intensity of Rivalry	High	Willingness to pay is lower as customers see more choice. Prices would then be lowered to be competitive. Costs for ingredients might get higher if suppliers see a rise in demand.	Food industry is simply competitive. With the abundance of recommendation sites, customers might want to experiment with new restaurants each day instead of committing to one religiously.	The identity the restaurant has built is helpful. More work needs to be done to really establish this image.
Opportunity of Complements	High	Profitability increases as willingness to pay increases, hence prices	Products to help restaurants sell are increasingly popular. One such product is online food platform. For example, foodora . This app employs biking deliverers, thus only showing customers choices nearby their area. The fact that Kreuzburger has 6 restaurants around Berlin means that it could cover the whole city and is always available on foodora, just like McDonalds, but for mid-to-high priced markets.	Increase online presence. The food chain is not yet on foodora, which is a pity.

The food chain achieves both internal and external consistency:

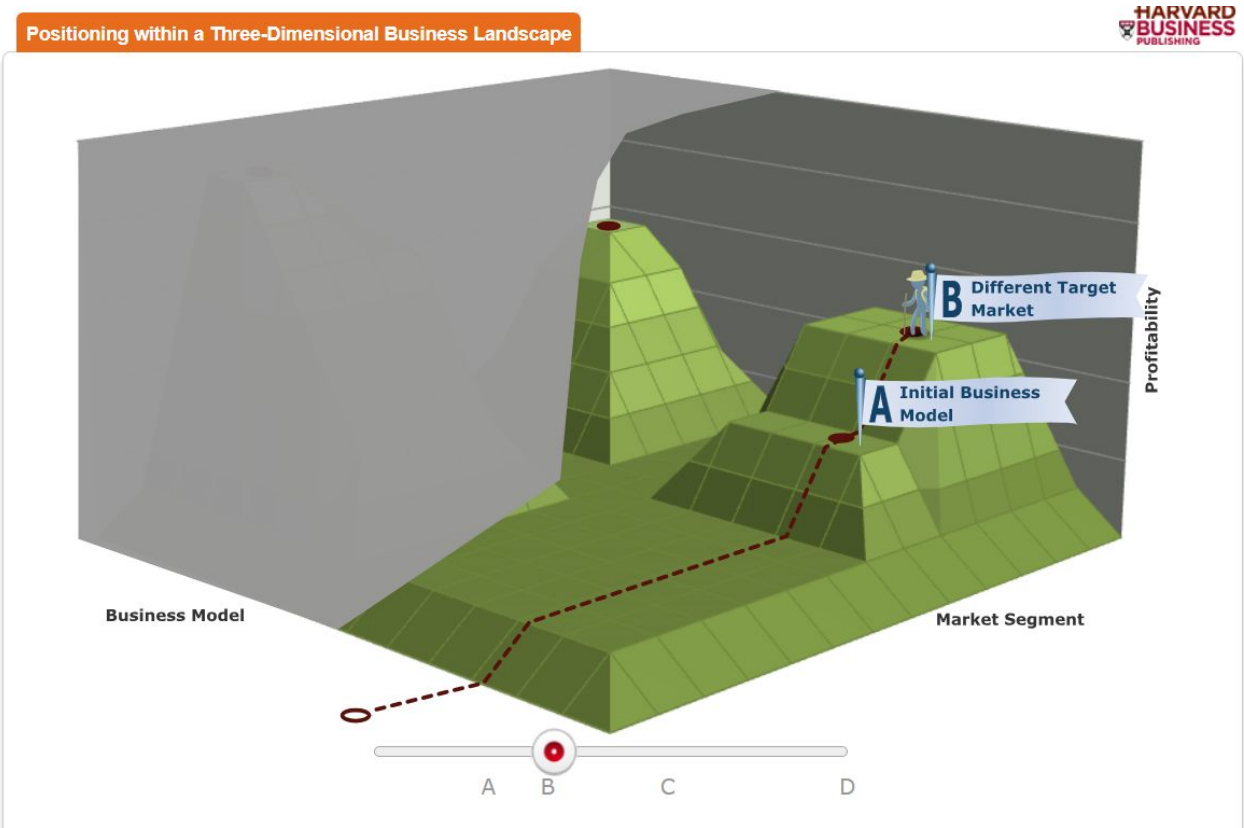

Fig 7: Positioning of the business in the overall landscape.

- Externally, the company has found a solid position in the business landscape. It does not compete for customer solely through price, but seems to have two solid customer segments in mind - vegan and liberal customers. There is plenty of room for improvement, however. As the strategy is playing out, they could still pivot and target a whole new market on their own. One such choice is to become one of the first restaurants to sell burgers made from artificial meat.
- Internally, the company's value proposition is based on differentiation. Vegan and health-conscious burgers are prominent in Kreuzburger's menu, which differentiates the food chain with other fast food restaurants. Also, with Berlin being a largely Turkish city, the presence of a burger house is new, thus differentiating itself in the city's business landscape, which sees a lot of Shawarma restaurants. While the burger house is very vegan-friendly, it also targets leftist customers. This is internally consistent, as many vegans are also conscious about the environment.

5. Conclusion and Recommendation:

The restaurant chain is a worthwhile investment, given that you could negotiate a right price for it. As calculated, €15.M would be a fair price to buy the whole restaurant. A return of around 4% annually is certainly better than buying bonds and depositing cash in banks. However, this return is lower than the average of the Germany stock market

index (GDAX) over the last few years, whose CAGR from 2014 to 2018 is 5%. Investing in the restaurant chain could still be superior in other aspects, however. One, the historical volatility of GDAX is quite high (shown in the graph below), while our restaurant might actually show a much stabler growth (if we could get access to its true financial figures). Two, the restaurant might be a necessary investment to diversify your portfolio. As stated my Markowitz Portfolio Theory, diversification to different industry sectors is necessary for portfolio returns to have a low volatility. If your portfolio does not have a restaurant/ dining stock yet, maybe this could be an appealing choice. [2]

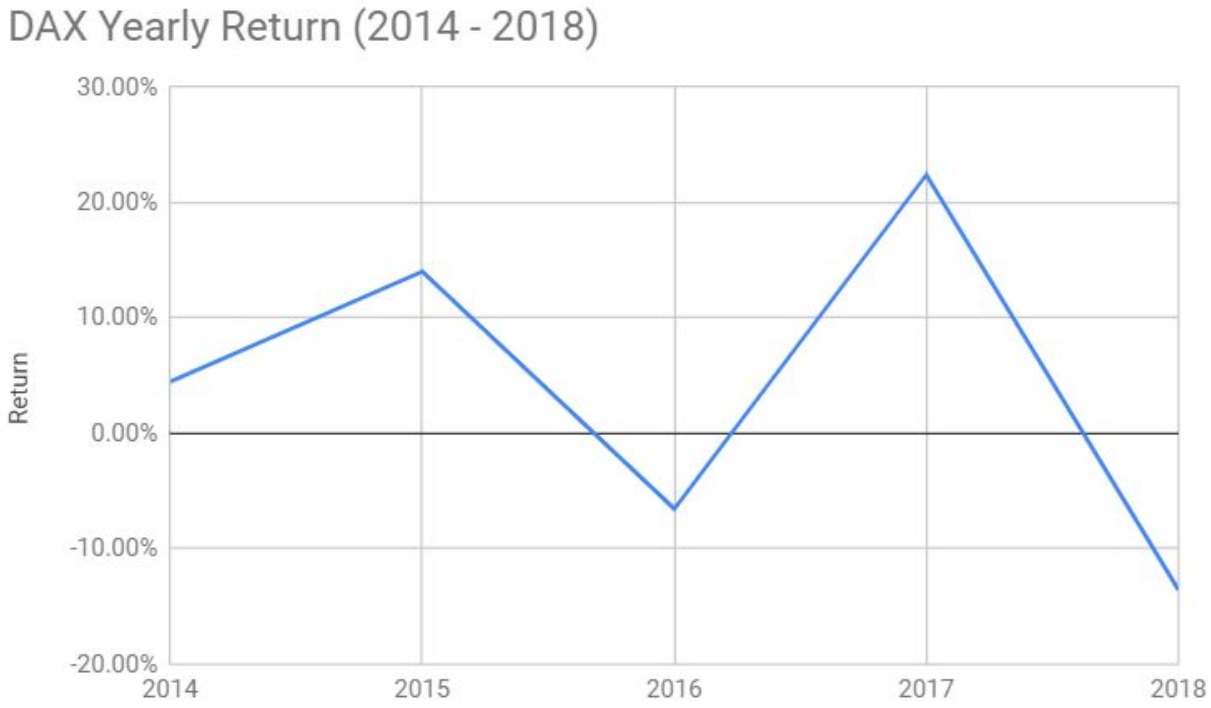

Fig 8: GDAX Annual Return (2014 - 2018). The volatility is obviously high.[3]

6. **Bibliography:**

Casadeus, R. (2014). Introduction to Strategy.
Damodaran, A. (2018). Data. Retrieved from http://pages.stern.nyu.edu/~adamodar/
Khan Academy. (2018). Present Value. Retrieved from https://www.khanacademy.org/economics-finance-domain/core-finance/interest-tutorial/present-value/v/present-value-4-and-discounted-cash-flow
Mergers & Inquisitions. (2014). DCF - Terminal Value - Gordon Growth Method Introduction. Retrieved from https://www.youtube.com/watch?v=hCGn1ejYs1I

[2] #expectedutility: Analyze choices in the present of risk in two scenarios. One, the choice to invest in the restaurant given the low growth rate of the industry, by conducting a sensitivity analysis. Two, the choice to invest in the restaurant in comparison to other selections (such as investing in GDAX or treasury bonds).

[3] #dataviz: Effective use of various figures (albeit some are created with the assist of external tools) to deliver arguments.

Wall Street Journal. (2018). MCD Income Statement. Retrieved from https://quotes.wsj.com/MCD/financials/annual/income-statement