Visa & MasterCard

In 1949 Frank McNamara was having dinner in a Manhattan restaurant and when the bill came he realized that he had left his wallet at home. By the time his wife arrived and the bill had been settled, McNamara was deep in thought. After ruminating for sometime McNamara came up with the idea of using charge cards in restaurants. A charge card is a credit card that must be paid in full at the end of each billing cycle. In 1950 McNamara cofounded Diners Club.

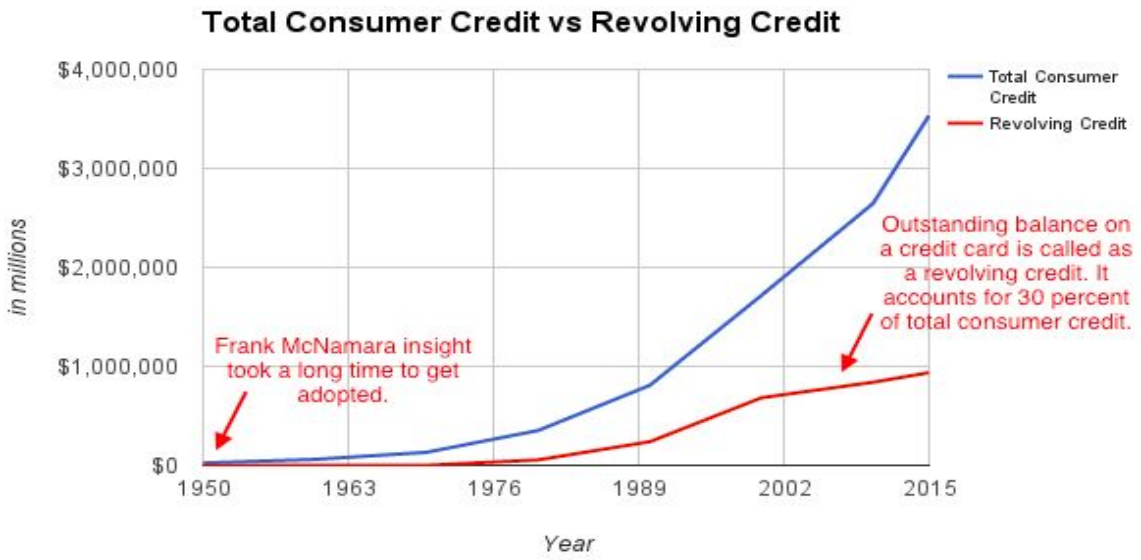
1. Frank X. McNamara.
Courtesy of Diners Club.

> By the card's first anniversary **there were 42,000 cardholders, each paying $18 a year for membership in the "club." And 330 U.S. restaurants, hotels, and nightclubs accepted these cards; they paid an average of 7 percent of the cardholder's bill to Diners Club.** In March 1951 Diners Club handled $3 million of exchanges between cardholders and merchants, and reportedly made almost $60,000 in pretax profit. At that pace, it was handling $35.5 million in transactions annually. Unlike store cards, Diners Club cards provided a broader medium of exchange-one that extended to at least all the merchants in the club.- Paying With Plastic

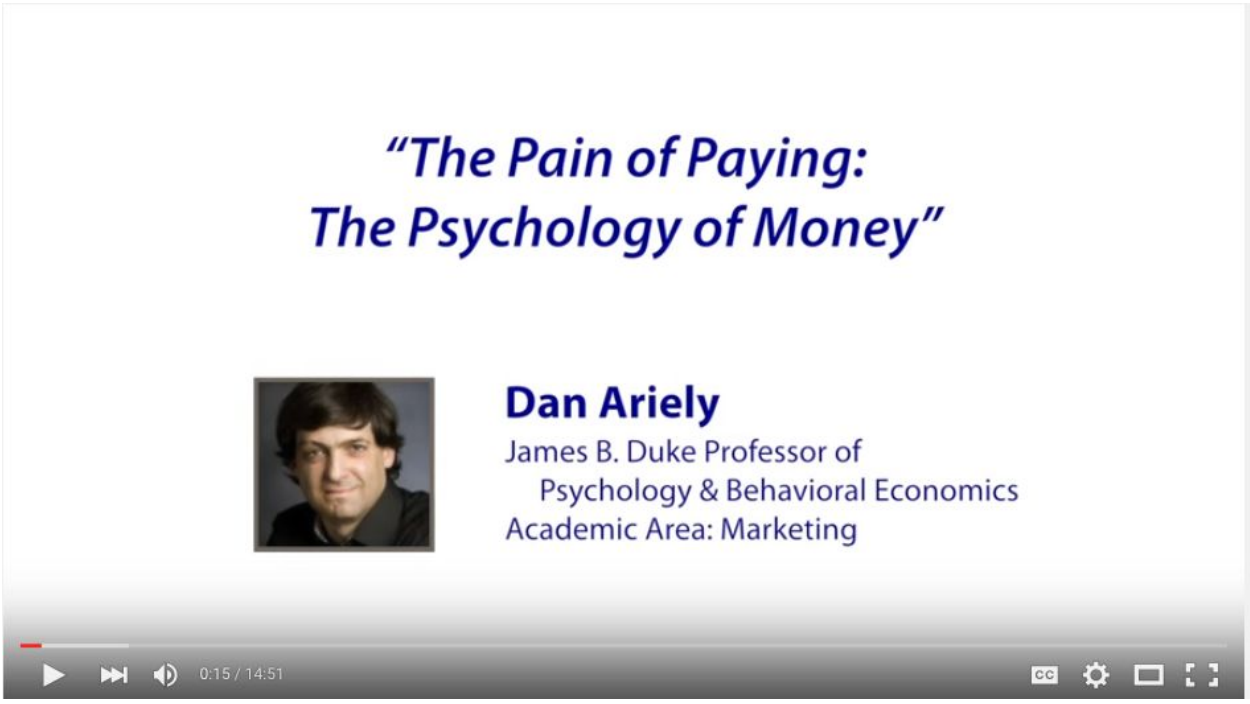
The Pain of Paying — The Psychology of Money

The concept of buying on credit dates back to prehistoric agricultural times where a farmer loans his neighbor some seeds in exchange for a portion future harvest. Even before the introduction of credit cards several department stores used to sell items on credit to customers of unquestionable responsibility. But the store credits were limited in scope as it can be used

only with that merchant. What Frank McNamara did was to extend the idea of credit from a single merchant to all the merchants who participated in Diners Club.



Take a look at the above chart which shows the total outstanding consumer credit in the US. I generated the chart using the data obtained from the federal reserve website. By the end of 2015 around 30 percent of the total consumer credit is in the form of revolving credit. If George Bernard Shaw looks at this chart then he would call Frank McNamara as an unreasonable man who made the world adapt to his unique insight. People buy more items than what is needed when the payment is done using credit cards instead of cash. Why is that?



In one study Dun & Bradstreet found that people spend 12 to 18 percent more when using credit cards instead of cash. In McDonald's restaurant customers on average spend $7 on their credit cards. But they only spend $4.50 if they paid using cash. Behavioral psychologist Dan Ariely tells that — We experience less pain of paying when the form of payment is distanced (credit card) from the pure representation of money (cash). No wonder why the merchants welcomed the concept of credit when McNamara approached them.

History Of Credit Card Companies

Credit card business doesn't require a lot of investments in fixed assets. It is a highly profitable business which can produce mouth watering returns on invested capital. But the key thing is to lend money to customers with unquestionable responsibility. Why is that? Credit card loans do not have any collateral and if you lend money to borrowers with questionable integrity then you will lose your shirt.

Upon seeing Diners Club success many companies entered the credit card business and most of them failed due to poor lending standards. The ones that survived dominate the credit card industry today — Visa, MasterCard, American Express, Discover, and Diners Club. We already looked at the origins of Diners Club. Let's look at the origins of other companies in detail.

American Express

American Express started as an express mail company in 1850. Money was one thing people wanted to move across the country. The U.S Post Office developed the money order and American Express developed a competing product. Both products were subject to theft and neither was a good substitute for cash. At that time an employee of American Express invented travelers cheque. The product was an instant hit as it was secure due to it its dual signature system (sign when you obtain, and sign when you cash). Also one can encash its travelers cheque at several merchant locations.

At one point it was the world's largest travel agency and operated the world's largest private mail service. Following the end of second world war the international travel was booming and American Express was flourishing. At that time it noticed that Diners Club was competing with its core travelers cheque business. And American Express had no choice but to enter the credit card business. It considered acquiring Diners Club in 1956, but that idea got rejected for some reason. In 1958 it entered the credit card business by acquiring the Gourmet Magazine Club card and Universal Travelcard.

> American Express adopted a slightly different pricing policy than Diners Club. It initially set its annual fee $1 higher (in 1958 dollars) than Diners Club's $5, **thereby suggesting that it was the more "exclusive" card.** But it set the initial merchant discount slightly lower than Diners Club's 7 percent. - Paying With Plastic

American Express focused on member spending by offering rewards and other benefits tied to their card use. Customers spend three times more money on American Express card compared to the competing card networks like Visa and MasterCard. The table given below clearly proves this fact. This is the reason why merchants accept American Express cards despite its relatively higher fees. Only time will tell if the merchants will be willing to pay higher fees for American Express card and the recent breakup of American Express and Costco definitely raises some doubts on this strategy. You can read about their breakup here.

2014	Total volume in billions	Cards in millions	Spending per card
Visa	$7,360	2,402	$3,064
MasterCard	$4,499	1,437	$3,131
American Express	$1,023	112	$9,134
Discover/Diners Club	$164	57	$2,877

Discover

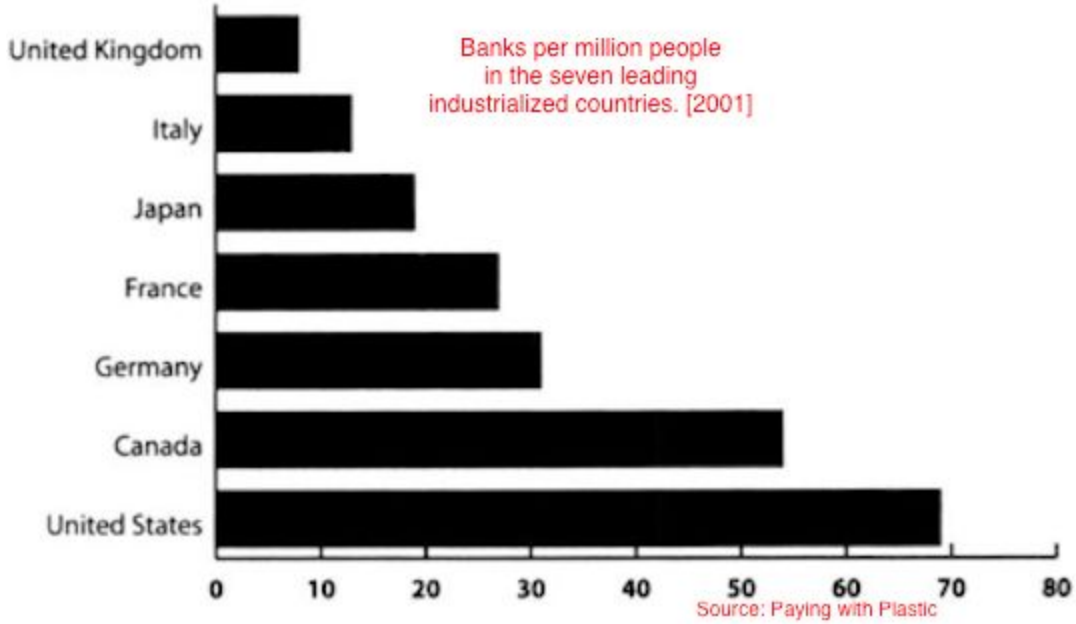
Sears is an American chain of department stores operating since 1886. In 1985 it introduced an orange-black-card and named it as Discover card. It issued this credit card to its twenty-five million creditworthy customers. It became an instant hit and by 1991 its card was accepted by more merchants than American Express. In 1993, Sears spun off its investment and credit arm which later merged with Morgan Stanley, and the card continued to prosper. Currently Discover Financial Services is an independent company. In 2008 Discover Financial Services acquired Diners Club from Citibank.

Discover has 7 million merchants compared to American Express which only has 5 million merchants. But American Express represents 25 percent of US credit card spending compared to Discover which only drives 6 percent of the total spending. Both Discover and American Express are called as closed-loop networks. What does that mean? Ponder on that question for some time and I will explain it in the next section.

Visa and MasterCard

At this point an inquisitive reader would ask why did the banks not get into the credit card business? Banks are in the best position to judge the creditworthiness of the customer and they can prudently issue credit cards. In 1958 Bank of America started the credit card business in California. It named its card as BankAmericard and experimented it in Fresno, California by mass mailing 60,000 credit cards to its customers. The product was an instant hit and more than 800 retailers in the Fresno area joined the program. Even though the product was successful it

could not expand beyond California. Why is that? The chart given below contains the answer to this question.



At that time interstate banking regulations in the US prevented banks from operating outside its domiciled state. This prevented Bank of America to expand its BankAmericard beyond California and it was unable to compete head-to-head with other closed-loop networks. To circumvent this problem and take its card national Bank of America tried to franchise its card by licensing it to selected banks across the country.

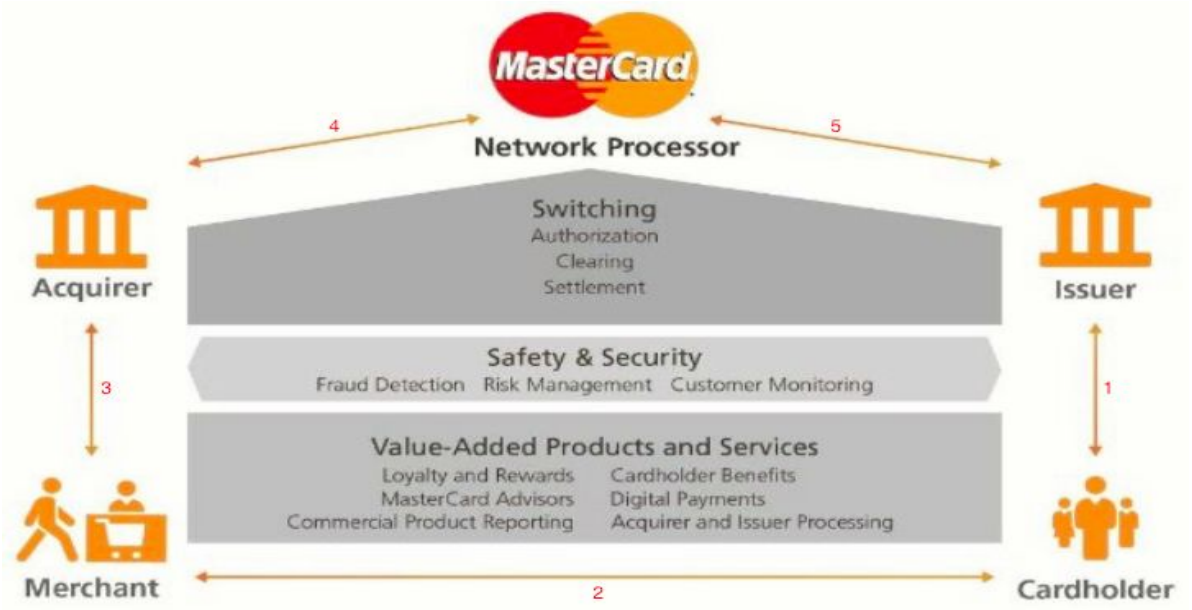
For this Bank of America charged the franchisees an entry fee of about $113,000 and a royalty of up to 0.5 percent of card holder volume. The franchisee system failed as incentives were not aligned properly. Major banks like Wells Fargo didn't like the idea of issuing someone else's card to its own customers. Is there a solution?

> Many banks found the answer in **co-opetition**. Banks competed for merchants and cardholders. Banks cooperated at the card system level by setting operational standards. It became apparent during 1968 that there were two competing national networks of banks: the BankAmericard franchise system, and the Interbank cooperative system... For the most part, the larger banks had chosen Interbank bank over BankAmericard. In contrast to the BankAmericard franchise model, Interbank charged only a "modest" entrance fee and a small annual fee to cover the operating costs of the joint enterprise. **And as noted, banks would be selling a brand they jointly owned, rather than that of another bank.** This was an important point for banks that harbored bored hopes of future national expansion when interstate banking restrictions were lifted-though in hindsight, that was still more than three decades away. - Paying With Plastic

BankAmericard franchisee model failed and it converted itself to the co-opetition model like Interbank. BankAmericard later changed its name to Visa and Interbank changed its name to MasterCard. Both Visa and MasterCard are called as open-loop networks. What does that mean? Ponder on that question for some time and I will explain it in the next section.

How Credit Card Networks Make Money

I am going to explain how open-loop networks like Visa and MasterCard makes money. By understanding that we will be in a better position to learn about the differences between open-loop networks and closed-loop networks like American Express and Discover. The diagram given below depicts a typical transaction that takes place in the MasterCard network.



1. An issuer is a financial institution like bank which issues payment card to its customers. The payment card could be a debit card [pay now], credit card [pay later], or a prepaid card [pay ahead]. Let us assume that Bank Of America [issuer] issues a credit card to me [cardholder]. This card will get processed through the MasterCard network.

2. I shop at Walmart [merchant] and my total purchases add up to $100. I swipe the credit card through a card reader. The card reader pulls the data from the magnetic-stripe or the emv-chip present in the card. It combines this data with information about the merchant and the dollar value ($100) of the purchase to create an electronic message. Let us assume that Walmart has an account with Wells Fargo Bank [acquirer]. This electronic message gets transmitted to the acquirer.

3. Wells Fargo Bank knows that my credit card belongs to the MasterCard network. How does it know that? All the cards that start with the digit 5 belongs to the MasterCard network. So it transmits this call to MasterCard's network.

4. MasterCard reads the electronic message and using the credit card number it figures out that Bank Of America issued this credit card. It contacts the issuer to see if I have enough credit to cover the $100 purchase. This is called as authorizing the transaction.

5. If I have enough credit in my account then Bank Of America will approve this transaction and send a success message back to MasterCard. It in turn will relay this back to the acquirer, which then sends a message back to the card reader at Walmart. The entire authorization process usually gets completed in just a few seconds. Without realizing the complexity involved in the credit card transaction I happily exit Walmart along with the purchased items.

So far we have covered only the authorization phase of the transaction. Remember that the transaction is fully complete only when the funds gets transferred from my account to Walmart's account. For that to happen MasterCard coordinates two additional steps called as Clearing and Settlement.

> Clearing is the exchange of financial transaction information between issuers and acquirers after a transaction has been successfully conducted at the point of interaction. MasterCard clears transactions among customers through our central and regional processing systems. Settlement is facilitating the exchange of funds between parties. - Annual Report

At this point I am going to ask you a question. For the above transaction how much money gets deposited in Walmart's account? If you answered $100 then you failed the test. Bank Of America keeps $1.70 [1.7 percent] and pays Wells Fargo the balance $98.30. The fee that the issuer charges the acquirer is called as an **interchange fee**. Why does the issuer charge this fee?

The issuer is providing free credit to the cardholder for 30 days and it is also taking the credit risk as the cardholder can default on the payment. In order to compensate for that risk it is charging an interchange fee. Also the issuer is using a portion of interchange fee to pay for cardholder perks like rewards programs so that the cardholders can spend more on goods and services. Who sets the interchange fee?

In some cases the issuer and the acquirer decide on the interchange fee. If there no agreement between them then the open-loop payment network [MasterCard and Visa] set the default interchange fees. Can we conclude that Wells Fargo will deposit $98.30 in Walmart's account? Not so fast. The acquirer charges Walmart additional fee which is called as **merchant discount rate** and deposits the balance in Walmart's account. If the merchant discount rate is 0.30

percent then Walmart will have $98 in its account. The acquirer charges this fee for providing transactional capabilities to the merchant.

So far MasterCard did not make any money from the above transaction. Then how does it get compensated? It gets compensated by charging fees to both issuers and acquirers based on the dollar volume of activity and the total number of transactions that take place through its network. Now it's time to answer the difference between open-loop and closed-loop network. One of the biggest difference is that open-loop networks don't take credit risk and this makes their balance sheet very light. On the other hand closed-loop networks take credit risk. The difference between the two is night and day.

> Operators of open-loop networks such as Visa generally do not issue cards, set fees or determine interest rates that cardholders are charged for use of their cards. Issuers have the responsibility for determining these and many other card features. In addition, such networks generally do not solicit merchants directly or establish the fees that merchants are charged for card acceptance, including the merchant discount rate. Both of these functions are generally the responsibility of acquirers. In a typical closed-loop payments network, the payment services are provided directly to merchants and cardholders by the owner of the network without involving third-party financial institution intermediaries. Closed-loop networks can range in size from networks such as American Express and Discover, which issue cards directly to consumers and serve merchants directly. - Visa S1 Report

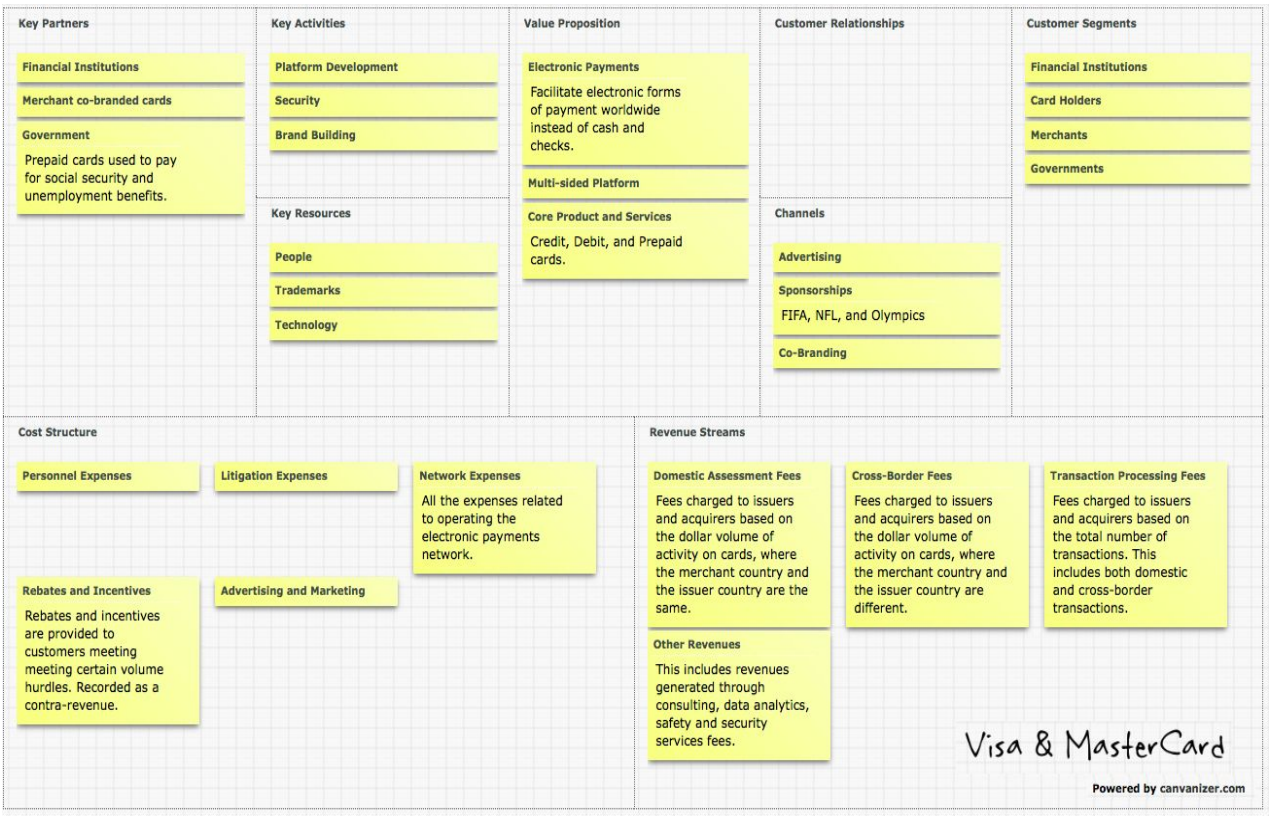
When I learnt about the business model of payment networks I felt bad for the merchants. They are the ones who pay the cost [interchange fee + merchant discount rate] of running the payment network. In a two-sided platform like payment networks someone has to pay the platform cost and the merchants were chosen to bear the cost. In some cases merchants can pass on this cost to the consumers by surcharging credit card transactions. Merchants are akin to the men's in Tu-Ba Cafe of Hiromoto Fukuda.

> Hiromoto Fukuda started a new kind of dating club, the Tu-Ba Cafe, in Osaka a few years ago. Men and women sit on opposite sides of a glass divide. If a man sees a woman he likes, he can ask a waiter to carry a "love note" to her. Like the long-lost inventor of the half-price frozen margarita for women, Fukuda knew he needed to get his pricing right. **So the Tu-Ba Cafe charges men $100 for membership plus $20 a visit, and lets women in for free.** That helps ensure there are enough men for the women and enough women for the men. Singles settings around the world have different prices, but most of them seem to agree that women need encouragement. - Paying With Plastic

Business and Moat

The best way to learn about any business is to get answers to key questions. But what are those key questions? The world has seven billion people and someone smart must have written

a book on what questions to ask while analyzing a business. Business Model Generation is that book which gives nine key questions that one should ask while analyzing a business.
I spent some time seeking answers to the key questions for Visa and MasterCard and came up with the business model canvas which is given below. I used the free online tool called canvanizer to generate the canvas. Click here to view the canvas clearly.



Take a look at the combined sales and operating profits of Visa and MasterCard given below. Together they generate an operating profit margin of 60 percent and pre-tax return on equity of 40 percent. It does not take a genius to tell that both Visa and MasterCard are great businesses.

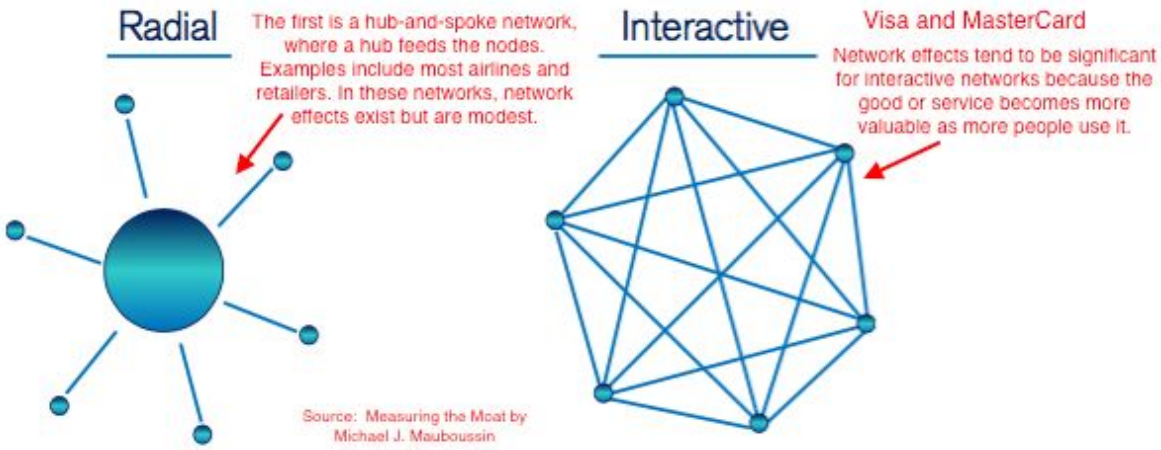
	Visa and MasterCard			
(in millions)	2009	2011	2013	2015
Sales	$12,010	$15,902	$20,090	$23,547
Pre-tax operating Income	$5,798	$8,169	$11,742	$14,142
Shareholders Equity	$26,705	$32,314	$34,365	$35,904
Pre-tax Return on Equity	21.71%	25.28%	34.17%	39.39%
Profitability	48.28%	51.37%	58.45%	60.06%
Efficiency	0.45	0.49	0.58	0.66

It is one of the most asset light toll bridges that I have ever seen. No wonder why Berkshire Hathaway owns both these securities in its equity portfolio. We already saw that being an open-loop payment network both Visa and MasterCard don't take any credit risk. And this makes them asset light. The next question is what makes them to generate such high profit margins?

Before answering that question I want to know how stable is the payments card industry. Why is this important? If the industry is not stable and the top players keeps changing continuously then the profit margins might be fleeting. What we need is an industry with few key variables that doesn't change much. In other words I am looking for invariants. Take a look at the market share by payments volume of the top players given below. What do you see?

Payments share	2006	2009	2014
Visa	49.68%	51.17%	50.64%
MasterCard	33.10%	33.93%	34.90%
American Express	12.99%	11.23%	10.75%
JCB	1.47%	1.37%	2.07%
Discover/Diners Club	2.76%	2.29%	1.63%

Both Visa and MasterCard retained the top spots for almost a decade. This doesn't happen by chance. The first reason is that the concept of money is very sticky. From prehistoric agricultural times to till date how humans paid for transactions got changed only four times — metallic coins, checks, paper money, and electronic money through payment cards. The second reason for their dominance is because of the **interactive network effects**. We use Visa or MasterCard because lots of other people do and that is why it is accepted by a lot of merchants.



This is a powerful moat for both Visa and MasterCard. For a competitor to dislodge them they need to create a new network with billions of customers, millions of merchants, and several thousand financial institutions. This is a damn hard feat to achieve and this is the reason why Visa and MasterCard enjoy high operating margins. From this can we conclude that the moat of Visa and MasterCard is impregnable? Of course not. There is a chance of another technological disruption which we will look at in the next section.

One of the best ways to learn about a business is to study its 10 year financial statements. And compare-contrast it with its competitor. This is what I did for Visa and MasterCard and here are few additional things I learnt by doing this. Both Visa and MasterCard give incentives and rebates to their customers who meet certain volume hurdles. These incentives bring down revenue and they are recorded as a contra-revenue. Take a look at the table given below which shows how the rebates are trending over the years. What do you see?

Rebates & Incentives	2015	2012	2010	2008
Visa	17.09%	17.14%	16.21%	15.64%
MasterCard	29.16%	26.82%	26.71%	22.74%

My hypothesis is that MasterCard is giving more rebates to its customers to attract them to use its platform. This creates a price war among competitors and over the long run it weakens the competitive position of all the players in the industry. One should watch this trend very closely and see how this is playing out.

Visa generates 53 percent of revenue from the US and the remaining 47 percent from the international markets. MasterCard generates 39 percent of its revenue from the US and the remaining 61 percent from the international markets. Why is MasterCard generating higher revenue from the international markets compared to Visa?

> MasterCard has centralized the operation of its global card system, keeping more of the decision making under the control of MasterCard International rather than its regional offices. Visa International, based in San Francisco, is the organization set up by Visa members. **Visa has, compared to MasterCard, decentralized the operation of its global card system, allowing individual regions more autonomy.** - Paying With Plastic

As of today Visa Europe is the only regional association which didn't merge into Visa Inc. And Visa is in the process of acquiring its European operations. After this acquisition the split between US and International revenues will narrow. Click here to read more about this merger. Visa's operating margin is 900 basis points higher than that of MasterCard. Take a look at the table given below which shows this fact. What explains this big difference?

	Visa	MasterCard
Gross revenues (in millions)	$16,741	$13,647
Operating margin (3 year avg)	62%	53%
No of employees same number of employees is not a typo	11300	11300
Revenue per employee	$1,481,504	$1,207,699

There are a couple of reasons that I can think of **(1)** On a per employee basis Visa earns 23 percent higher than that of MasterCard. This could be because total services revenue as a percentage of sales is higher in MasterCard compared to Visa. My hypothesis is that service revenue is labor intensive and it's a low margin business. **(2)** Visa generates 53 percent revenue from US and this could give it some operating leverage. Will Visa's overall operating margin come down after the Visa European merger? Only time will answer that question.

Risks

A casual glance at the income statement of Visa and MasterCard will reveal that both the companies are subject to a lot of **litigation risk**. The table given below clearly shows this fact. The litigation expenses in 2008 were related to settle the antitrust lawsuit filed by Discover and American Express. This lawsuit was filed as Visa and MasterCard prevented their member banks from issuing the credit cards of closed-loop networks.

Litigation as % of net revenue	2015	2012	2011	2008
Visa	0.10%	39.34%	0.08%	23.47%
MasterCard	0.63%	0.27%	11.47%	49.74%

In 2005 around seven million merchants filed lawsuit against Visa and MasterCard alleging that the open-loop networks colluded with banks to eliminate competition and increase the price of their credit card transactions. This resulted in the continuous increase of interchange fees which the merchant ended up paying the issuing banks. You should read this and this to get more information about this lawsuit.

Visa and MasterCard settled this lawsuit with the merchants in 2012 by paying $5.7 billion. This is the reason why you see a spike in litigation expenses during this time. Along with this amount the merchants were allowed to add surcharge on credit card transactions. In the settlement Visa and MasterCard added a clause which asked the merchants to give up their rights to sue over various policies and practices of the open-loop networks.

Large retailers like Amazon and Target didn't want to give up the option of right to sue. So they didn't take the settlement. Given that there are several large retailers that are litigating one can expect more pain for Visa and MasterCard. You can read about this news here. Here is another legislation which got passed recently by European Union which sets a cap on interchange fees and to make it more transparent.

> As a general rule, the Regulation will cap interchange fees at 0.2% of the transaction value for consumer debit cards and at 0.3% for consumer credit cards. For consumer debit cards, it also gives flexibility to Member States to define lower percentage caps and impose maximum fee amounts. Besides capping interchange fees, the Regulation also increases transparency on fees and will enhance competition for payment card schemes and banks. - European Commission

From all this one can conclude that a shareholder of Visa and MasterCard cannot avoid the litigation risk. The only way to handle the litigation risk is through a broad diversification at the portfolio level. The next risk which is often talked about is the obsolescence of credit cards due to **technological disruption**. I have categorized the technology risks into four buckets and they are given below.

Category	Examples	Notes
Digital Payments that are built on top of the existing payment card networks like Visa and MasterCard.	Square and Apple Pay	This drives more volume to Visa and MasterCard and helps them to generate more revenue. The only threat is that Visa and MasterCard will be dealing with big and powerful customers like Apple.
Digital Payments that use a bifurcated payment solutions.	PayPal	If customers use payment cards in their PayPal account then Visa and MasterCard will get their cut. If they use their bank accounts as a funding source then the payment card networks will not make any money. Few years back PayPal partnered with Discover to expand further into offline retail. Only time will tell if PayPal will be able to take away market share from Visa and MasterCard. This is not going to be easy as they need to break the habit formation of customers.
Leapfrogging potential in developing countries that have low banking and	M-Pesa and RFID cards	In countries where the credit card penetration is very low there is a possibility of leapfrogging to a different

credit card penetration.		payment method. This is similar to developing countries skipping telephones (land lines) and started using mobile phones. Adoption of M-Pesa in Kenya and RFID cards in Taiwan are some examples. M-Pesa and RFID replaced the inferior cash and this doesn't mean that they will replace credit cards all over the world. I don't consider them as a threat to Visa and MasterCard.
Technologies that could make the intermediaries obsolete.	Blockchain	Blockchain is an internet technology using which one can create a ledger which is secure, distributed, and decentralized. Using this banks can authorize, clear, and settle the transactions without the need for Visa and MasterCard. Let us assume that the technology is well developed for adoption. What are the incentives for banks to disintermediate? In a typical $50 credit card transaction the issuing bank makes 91 percent of the fees and the balance 9 percent goes to the open-loop networks. As the incentives are aligned it is hard for banks to cut the intermediaries. Only time will tell how this movie is going to unfold.

The third risk that I can see is **country specific risk**. For example in 2015 Russian government amended its National Payments Systems laws to require all payment systems to process domestic transactions through a government-owned payment switch. Also countries like China and India give preference to their domestic open-loop payment networks like UnionPay and RuPay. This is not a big threat as both Visa and MasterCard have less than 10 percent of net revenues coming from a single country outside United States. But this will definitely reduce their future growth prospects.

Valuation

For a great business I am willing to pay a fair price for its stock. But what does a fair price mean? It is a price at which a shareholder's gain or loss during his holding period is proportional to the gain or loss in per-share intrinsic value recorded by the company during that holding

period. This is beautifully explained by Warren Buffett in his owners manual. Read it a few times to get this concept etched into your brain.

> To the extent possible, we would like each Berkshire shareholder to record a gain or loss in market value during his period of ownership that is proportional to the gain or loss in per-share intrinsic value recorded by the company during that holding period. **For this to come about, the relationship between the intrinsic value and the market price of a Berkshire share would need to remain constant, and by our preferences at 1-to-1.** As that implies, we would rather see Berkshire's stock price at a fair level than a high level. Obviously, Charlie and I can't control Berkshire's price. But by our policies and communications, we can encourage informed, rational behavior by owners that, in turn, will tend to produce a stock price that is also rational. Our it's-as-bad-to-be-overvalued-as-to-be-undervalued approach may disappoint some shareholders. We believe, however, that it affords Berkshire the best prospect of attracting long-term investors who seek to profit from the progress of the company rather than from the investment mistakes of their partners. - Owner's Manual

Let us look at the returns earned by an investor in MasterCard who purchased the stock in 2010 and held on to the stock until the end of 2015. The table given below summarizes the investor's experience. Spend some time to make sure that you understand what is inside the table. What do you see?

	MasterCard (Per share numbers)						
Year	Sales	Earnings	Dividends	Book value	Return on Equity	Share price	Price-to-earnings
2015	$8.52	$3.36	$0.64	$5.35	62.85%	$100.46	29.9
2014	$8.10	$3.11	$0.44	$5.86	53.09%	$92.06	29.6
2013	$6.86	$2.57	$0.21	$6.19	41.52%	$85.32	33.2
2012	$5.91	$2.20	$0.11	$5.54	39.72%	$49.32	22.4
2011	$5.25	$1.49	$0.06	$4.59	32.45%	$31.29	21
2010	$4.23	$1.41	$0.06	$3.98	35.41%	$22.56	16

During the five year period the investor compounded his investment at 35 percent. MasterCard compounded its sales at 15 percent and earnings per share 19 percent. Earnings compounded faster than sales due to margin improvement and share buybacks. The investor got lucky as the remaining 15 percent came from multiple expansion which went up from 16 to 30.

There is one key element which a lot of investors miss about MasterCard. The company grew its sales and earnings by only reinvesting 20 percent of its operating cash flows. The remaining 80 percent was used for dividends, buybacks, and building treasury assets. MasterCard is a great business which spits out a lot of free cash flow. The investor who bought the stock in 2010 will be enjoying a dividend yield of close to 3 percent.

Adjusting for currency fluctuations MasterCard earned $3.62 per share in 2015. I would be surprised if MasterCard doesn't compound its earnings by 15 percent for the next five years. Why is that? Even today 85 percent of the world still uses non-electronic (cash and checks) forms of payment. Also let's assume that the earnings multiple contracts by going down from 24 to 18.

An investor buying the share of MasterCard at $88 would earn a return of 8.25 percent from price appreciation. To that add dividend yield and share buybacks which should average around 5 percent at 20 percent reinvestment rate. So the total return an investor can expect at the current price is around 13 percent. One can do a similar exercise for Visa and calculate the expected IRR over a five year holding period.

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8. Bitcoin Series by Khan Academy
9. The SmartPhone Wallet by David W. Schropfer

Disclaimer: As of this writing, I do not own shares of Visa and MasterCard. This is not a recommendation to buy, sell, or hold. I am not a registered analyst. I wrote this document to organize my thoughts and to deepen my understanding about the the payment card industry. I am sharing it so that you can learn something from this.

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