

Development of tactical solutions for the e-credit card issuing industry

e-credit card
issuing
industry

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Abstract

Purpose – This paper aims to develop a set of tactical electronic business solutions for the electronic credit card issuing industry.

Design/methodology/approach – Specifically, a strategic credit card issuing (SCCI) model is developed to analyze e-business in the credit card issuing industry. Second, a set of tactical solutions is derived on the basis of the SCCI model. Third, pattern analysis is conducted on the basis of data collected from dominant credit card issuing companies to further investigate the implementation status on these electronic business solutions in the credit card issuing industry.

Findings – The findings show that three categories of electronic business solution items can be classified. The average variability of electronic business implementation patterns for business-to-business, business-to-customer and business-to-internal in each company shows a variety of electronic business strategies implemented by these dominant companies.

Originality/value – The results will help managers and executives when they make strategic and tactical decisions on electronic business in the credit card issuing industry.

Keywords Credit card issuing, Electronic business, Strategic value chain

Paper type Research paper

1. Introduction

The economic segment of the general environment in the credit card issuing industry is advancing as the US economy improves. As the employers' and employees' disposable incomes are increasing, the number of people who are willing to borrow money for spending is also increasing on a large scale, which will bring great benefits to the credit issuing industry.

Krajewski *et al.* (2007) mentioned five developments in the global market that require companies to formulate effective global strategies. One of the developments is “loosened regulations on financial institutions” that focused on the US Government’s effort to remove “interest rate ceiling to allow domestic banks to attract more foreign investors by offering



higher rates.” On the other hand, “foreign banks removed barriers to entry.” The authors stated that “the world’s financial systems became more open, making it easier for firms to locate where capital supplies, and resources are cheapest” (p. 14).

However, Oja stated in Standard & Poors NetAdvantage Industry Survey for diversified financial services (2014) that “currently, financial markets and their participants face more regulations” (p. 12). Although the development of “loosened regulations on financial institutions” is debatable, globalization has had a tremendous effect on financial services industries, especially the credit card companies. Oja also stated that:

[...] credit card companies have generally concentrated on developed markets such as Canada and the United Kingdom, where cultural attitudes toward credit are most in tune with those of the US. As these markets have also matured, some companies have expanded to other markets (p. 20).

The “other markets” mentioned are financial markets in some developing countries, such as China, that lacks proper third-party credit bureaus. Therefore, the problem with the globalization efforts in credit card companies is “the lack of credit bureaus limits unsecured lending to some extent” (p. 20).

According to the data and the trend in Carusotto (2014), revenues are the single biggest dollar amount for credit card issuing industry. Industry value added (IVA) is the difference between “the market value of goods and services produced by the industry” and “the cost of goods and services used in production.” IVA is also used to measure “the industry’s contribution to GDP, or profit plus wages and depreciation.” Enterprise is “a division that is separately managed and keeps management accounts.” Establishment is “a single physical location where business is conducted or where services or industrial operations are performed” (Carusotto, 2014, p. 39). In other words, establishment is per unit and enterprise is the total units. Industry revenue in the industry dropped significantly during the credit crisis periods from 2008 to 2009. However, IVA dropped even more right before the crisis. The profit loss should have given a warning to the companies that the crisis is about to happen. Surprisingly enough, the wages stayed fairly stable.

The credit crisis from 2007 to 2009 has incurred a detrimental effect on the industry revenue and customer retention rate. Even after the crisis, credit card issuing industry has not recovered as fast as some of the other industries because of the “elevated unemployment levels and the consumer deleveraging process” (Carusotto, 2014, p. 5). Starting in 2013, the credit card issuing industry was continuing its expansion process at a growth rate of 0.2 per cent from 2014 (Carusotto, 2014).

Credit card issuing industry focuses mainly on four groups of consumers, including college students, working professionals, senior citizens and corporations (Carusotto, 2014). The working professionals group has 60 per cent of the market, whereas college students group has almost 15 per cent of the market for the industry (Carusotto, 2014). College students are usually the deficit unit in the financial world because they normally spend more. Due to the recent regulations on soliciting credit card applications to young adults, credit card issuers have had to change their focus, directing more attention toward working professionals. Working professionals are usually enticed by the cash reward program and travel reward program that either generate more cash for them, or help them afford expensive airline tickets for business and leisure trips. Most of them have just graduated from colleges and are craving to spend off their first paychecks (Jagoda and Samaranayake, 2017).

Senior citizens are a growing market for credit card issuers in the recent years. Senior citizens have always been thought as the surplus unit in the financial world, which states that seniors tend to save more. Given the recent price inflations on medications and hospital

procedures, fewer senior citizens can afford their medical needs just from social securities and their retirement savings. In turn, they need to start borrowing.

Corporations commonly use credit card as their source of financing because credit card debt offers the cheapest rate for borrowing. However, during the recent credit crisis when small business owners faced a tremendous amount of credit card debts, corporations were ultimately discouraged from using credit card for financing purpose. Coincidentally, those small business owners are not included for protection in the Credit CARD Act of 2009 from “limit on excessive fees and interest rate increases on existing balances” (Carusotto, 2014, p. 16).

1.1 Information technology impact on USA and global marketplace

Many credit card issuing banks and institutions are issuing their credit cards to both domestic and international consumers (Carusotto, 2014). The market concentration is currently showing that credit card issuers put their strategic focus on developing new information technology (IT) and systems to provide benefits to their domestic and international consumers (Carusotto, 2014).

The advances in information and communication technology have had a large impact on the development and application of electronic business (e-business) and mobile business (m-business) in the credit card issuing industry (Carusotto, 2014). For example, the development in contactless technology makes the payment method more efficient. By using contactless technology, cardholders can wave instead of swipe their credit cards to make payment (Carusotto, 2014). There are two applications of this new technology. One is to allow cardholders to wave their card cards to a stationary machine. The other is to apply to the mobile payment systems for minimizing cardholders’ transaction processing times and simplifying their transaction processes. The contactless mobile payment method based on the contactless technology will only need cardholders to download a payment app on mobile devices (such as a mobile phone); hence, cardholders do not need to carry their credit card all the time (Carusotto, 2014; Ghasemi *et al.*, 2016; Pan *et al.*, 2014).

Fed’s 2013 survey stated that:

87 per cent of the US adult population has a mobile phone, and 51 per cent of all smartphone users had used mobile banking in the past 12 months. This translates to 28 per cent for mobile users and 48 per cent for smartphone users. Meanwhile, the use of mobile phones for point-of-sale payments has experienced substantial growth in recent years—increasing threefold between 2011 and 2012, and again between 2012 (6 per cent) and 2013 (17 per cent) (Oja, 2014, p. 11).

On a global scale:

[. . .] nearly five billion mobile phone users worldwide, and seven out of ten people worldwide have a mobile phone, while only half the world’s households have bank accounts. Nearly 174 million people (about 72 per cent mobile market penetration) owned smartphones as of the three months ending September 2014, according to comScore [. . .] According to a June 2014 report from Juniper Research Ltd., [. . .] the value of mobile commerce transactions conducted via mobile handsets and tablets are forecast to exceed \$4.7 trillion by 2019, up from \$2.5 trillion estimated for 2014. In terms of users, in a November 2014 report by Juniper Research, more than two billion mobile phone or tablet users are estimated to make some form of mobile commerce transaction by the end of 2017, up from an estimated 1.6 billion in 2014 (Oja, 2014, p. 11).

E-business and m-business have been so successful in the recent year that nontraditional online-payment companies have taken the step to “slice a piece” from the overall industry market share “pie”. Those nontraditional companies include Google and Apple:

According to the November 2013 study by Accenture [. . .], by 2020, US banks could lose 35 per cent of their market share to new competitors, ranging from small payment firms to Internet giants like Google (Oja, 2014, p. 12).

This raises concerns for traditional credit card issuers, and:

[. . .] some banks are already gearing up, and placing bets on the future of digital commerce. For instance, JPMorgan Chase plans to introduce a digital wallet later this year [2014]. Apple Inc. launched Apple Pay on October 20, 2014 and has seen wide acceptance from its users with around one million credit card activations within 72 hours of availability of the system (Oja, 2014, p. 12).

With the advances in the emerging IT, new problems have emerged in credit card issuing industry. The most critical problem is the protection from identity theft. Target and Home Depot credit card breaches happened not long ago, which tend to increase the awareness to develop secure payment networks and/or protect traditional plastic credit card from exposing any private information when it is swiped or waved to complete any transactions. Other problems are involved with the IT outsourcing decisions that the credit card issuers have made. Several disadvantages of IT outsourcing include “risk of loss of certain organizational competencies, problems created by changing procedures, difficulties in accurately knowing cost impact, cultural problems, and other factors” (Paisittanand and Olson, 2006, p. 1251).

The objective of this paper is to analyze the operation management fields of the credit card issuing industry. This paper will mainly examine the industry based on the two main E-chains of the supply chain categories. They are E-value chain and E-customer chain. This paper will use the analytical tools to evaluate every stream of the supply chain management in the industry. At the end of this paper, the problems associated with the supply chain will be concluded, and possible solutions shall be recommended to top-level managers and executives when they consider adoption of e-business solutions in the credit card issuing companies.

Due to the lack of research in investigating the tactical solutions to accelerate IT development and adoption in credit card issuing industry, this paper aims at developing a set of tactical solutions in the credit card issuing industry to provide standardized e-business solutions. The remainder of this paper is organized as follows: Section 2 presents a strategic credit card issuing (SCCI) model. Section 3 presents methodology including a set of derived tactical electronic business solutions based on the SCCI model, followed by data collection and analysis about the implementation pattern for the top dominant companies in the credit card issuing industry. Section 4 shows the last section that provides discussions, implications and conclusions.

2. Conceptual model

Krajewski *et al.* (2007) discussed the operation management with the concept of supply chain. Supply chain includes value chain and customer chain. The importance of operations management in any kind of organization is revealed in the management of its supply chain. “Because firms are typically owned and managed independently, the actions of downstream supply chain members [. . .] can affect the operations of upstream members” (p. 380). The bullwhip effect shows that “[. . .] in supply chains whereby ordering patterns experience increasing variance as the [products or services] proceed upstream in the chain” (p. 381). Having an integrated supply chain can help the organization to have an efficient operating process which can supplement the value-generating activities and increase the companies’ performance.

Krajewski *et al.* (2007) defined “value chain” in their book as “the interrelated series of processes that produces a service or product to the satisfaction of customers” (p. 9). Porter characterized “value chain” as “a connected series of activities, each of which adds value or supports the addition of value to the firm’s goods or services” (Porter, 1979).

Dess *et al.* (2014) introduced the analytical tool of value chain analysis when assessing the internal environment of the firm (p. 72). Dess *et al.* (2014) stated that value chain analysis is “a strategic analysis of an organization that uses value-creating activities” (Dess *et al.*, 2014, p. 72).

Other researches exemplified “supply chain” because of the casual relationship between “value chain” and “customer chain” with “supply chain” (Liu *et al.*, 2014; Liu *et al.*, 2015; Gu *et al.*, 2016). One definition of “supply chain” is as “the flow of materials, information, money, and services from raw material suppliers through factories and warehouses to the end customers” (Chapter 7: E-supply Chains, Collaborative Commerce, Intrabusiness EC and Corporate Portals, p. 279).

An e-supply chain, therefore, is “a supply chain that is managed electronically, usually with Web technologies” (Chapter 7: E-Supply Chains, Collaborative Commerce, Intrabusiness EC, and Corporate Portals, p. 279). E-value chain involves different categories of e-commerce, such as B2B and B2C (Huber *et al.*, 2007). E-value chain is “an interrelated series of processes [...] that uses IT to enhance performance to create a competitive advantage” (Howell and Wei, 2010, p. 73). Many other definitions for value chain are easy to be found along other academic papers (Knod and Schongerger, 2001; Wei *et al.*, 2006; Gan *et al.*, 2016). Jill Griffin explained the critical needs to distinguish the real customer in any customer chain (Griffin, 1999). Jill gave some real-life examples about both the reward and the consequence to an organization if the managers did or did not take into account all the “customers” in the customer chain, not just the end customers. She concluded her point by promoting the idea of planning a value-added loyalty system (Griffin, 1999).

Credit Cards are the products the issuers provide to grant customer convenience in their payment experiences. In return, issuers can make profits from customers’ usage of their cards. The terms used in the credit card industry are interest income and fee income. Porter (1979) stated that in a value chain, an electronic strategy (e-strategy) model is developed for any e-businesses focusing on value increasing. Therefore, the SCCI model based on E-value chain analyses shown in Figure 1 is formed with some adjustments from the sample paper given as a reference to this portfolio paper.

The inbound logistics in the primary activities of the credit card issuing industry’s value chain consist of the group of suppliers to the resources. The suppliers include The Fed, banks in general and any other financial institutions. The Fed usually sets the interest rate for borrowing in the market, and any fluctuations in interest rate will have strong influences in credit card usage, because credit cards are one type of financing.

Banks in general are commercial banks and investment banks. These are sometimes the direct source of payment for cardholders’ credit card bills. The incomes to the credit card issuers are from deposits as well as gains from investing activities in banks. Any other financial institutions, who serve as suppliers and customers to the credit card issuers in which these financial institutions supplied funds to the issuers, continue their operations, and receive funds from the issuers for their investment needs.

The operation side of the primary activities has developed toward electronically throughout history. Credit card issuers along with banks focus their competition on e-business and m-business nowadays. The paper-based operations are obsolete, and no financial institutions of any kind would even consider the possibility of writing something on paper and file away without the online database file to provide accurate and efficient customer service when the customers drive or stop by the branch office.

Outbound logistics are the management of the delivery channels the credit card issuers use to deliver their cards to the cardholders. Online banking and mobile banking services

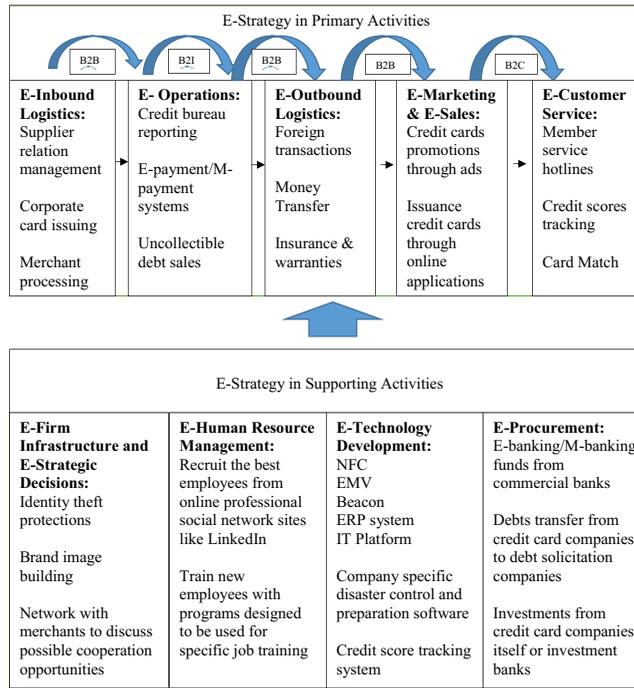


Figure 1.
The strategic credit card issuing model

have been able to benefit both the issuers and the cardholders positively. The online banking services can provide convenience to customer, reduce cost for the issuers and increase customer retention (Howell and Wei, 2010, p. 74). Some commercial banks have the online “Bill-pay” services, which can help customers to set automatic payment schedules so that they will no longer need to worry about paying their credit card bills on time (Howell and Wei, 2010, p. 74). These online services greatly aid credit card issuers and commercial bank collaborations to create a “win-win” situation for both parties.

The mobile banking services simplify the online services even more. With the increasing developments and usages of Apple or Android smart phones, customers have started to feel the incredible freedom of checking on their balances anywhere at any time. The mobile banking trend has just begun, and current three ways to access the mobile banking services are downloading apps on the smart phones, browsing mobile sites of the main banking websites and subscribing for text messages alert and remainder (Howell and Wei, 2010 p. 74). For credit cardholders, all three ways to access will be available. In addition, the contactless system mentioned in the earlier part of this paper will also be a unique way for cardholders to get access to the mobile banking services. Companies among all different fields have set up similar mobile banking services to construct competitive edges. Companies such as Google with its Google Wallet, Amazon with its online services that allow customers to transfer money, Square, Inc. with its Square Register and even Facebook express interest in this online service (Oja, 2014, p. 11). However, the most successful company with mobile banking services is Starbucks Corp. with its mobile application that “enables about 10 million customers to pay for their coffee and registers about 5 million transactions per week” (Oja, 2014, p. 11).

The marketing techniques for credit card issuing industry have shifted from paper-based mailing to electronic-based promotion online. Although mailing is still considered as the most effective way to market to consumers, more and more credit card issuers have been able to work with website developers such as Facebook, Twitter and any other websites that have the most hit from young adults to promote their cards through printed or video commercials.

Original credit card issuers are the six biggest credit card companies: American Express, Bank of America, Capital One, Citigroup, Discover Financial Services and J.P. Morgan Chase. Other players are fighting for the market share in the issuing industry as well. PayPal introduced its mobile application, PayPal Here, on March 2012 which “can accept card payments through the phone’s camera as well as through a mobile card reader similar to Square” (Oja, 2014, p. 13). Three months later, PayPal also partnered with Discover Financial Services:

[. . .] to bring PayPal to more than seven million merchant locations across the US that already had an existing relationship with Discover [. . .] PayPal recently forged several partnerships to expand the reach of its mobile payment service (Oja, 2014, p. 13).

Another recent development in credit card-related payment options is the Bluebird “prepaid general-purpose debit-style card” program, which targets low-income consumers without bank accounts (Oja, 2014, p. 5).

Two most brilliant developments in mobile payment solutions in the recent years are the design of Merchant Customer Exchange (MCX) and Apple Pay. MCX is:

[. . .] a versatile mobile commerce platform (through an application) to smartphone-enabled consumers. The original partners included in the group were major retailers including 7-Eleven Inc., CVS Caremark Corp., Darden Restaurants, Lowe’s Companies Inc., Publix Super Markets Inc., Sears Holdings, Target Corp., and Wal-Mart Stores Inc. As of May 2014, total number of merchant members reached 59. New partners include ExxonMobil, Giant Eagle, Kum & Go, and Rite Aid Corp (Oja, 2014, p. 4).

Apple Pay is “a mobile payment system that works with iPhone 6 and iPhone 6 Plus [. . .]” Further developments are underway to extend the package to contain Apple Watch, iPhone 5, 5c and 5s worldwide (Oja, 2014, p. 5).

Customer services are mainly the competitive function each credit card issuers focus on (Howell and Wei, 2010):

With the variety of means that customers have at the tips of their fingertips to receive quality customer service, there are very few situations in which they should need to personally visit the bank in person (Howell and Wei, 2010, p. 74).

From frequently asked questions, online chat and advice and phone support, customers can choose the way they prefer to be serviced (Green and Pearson, 2009).

The four support activities to the primary activities in the value chain provide the same electronic protections and enhancements to the technology implemented in the operations. The examples of the support technologies are near field communication (NFC); Europay, MasterCard and Visa (EMV); Beacon; and Host card emulation (HCE). “NFC technology is a short-range communications standard that enables mobile phones to securely transmit payment information to a contactless payment terminal.” This technology “paves the way for mobile device makers, mobile operators, and retailers to partner with financial institutions.” The underlying protection concept is:

[. . .] the user prepares to make payment, sends the signal while holding the device close to the terminal. The range is very short, limiting the ability of someone in the vicinity to pick it up. Further, it has security protection to prevent repeat transactions (Oja, 2014, p. 13).

This technology is thought to ease the tension of identity theft concerns.

The EMV technology was widely used originally in Europe (Oja, 2014):

Compared with the current magnetic stripe in most credit cards, EMV provides a safer way of authenticating credit card transactions through its personal identification number (PIN) and chip features that employ cryptography and a range of other security measures to defend against card fraud (Oja, 2014, p. 13).

Beacon is “currently employed by PayPal”, and it is [...] a Bluetooth low-energy (BLE) device that enables hands-free payment, identity management, and customer analytics. This technology broadcasts signals that can be picked by compatible or smart devices” (Oja, 2014, p. 13). HCE is a cloud-based payment for Android devices (Oja, 2014, p. 13). It is:

[...] a technology currently employed by Visa and MasterCard that enables NFC application [...] to emulate a smart card—letting users pay with their smartphones, while permitting financial institutions to host payment accounts in a secure, virtual cloud (Oja, 2014, p. 13).

This technology allows the users to store critical information in the cloud.

3. Methodology

3.1 E-business solutions development

Most of the credit card issuers are banks that provide credit card business services along with banking services as well. To name a few credit card companies’ major business lines, Capital One Financial Corp. has participated in three different types of business activities. These are credit card business, consumer and commercial banking and non-bank activities. Each of the three business activities contains subcategorized activities that combine together to be the daily operations of the company:

For example, credit card business department issues domestic and international credit cards as well as domestic installment loans; consumer banking department offers consumer lending products like auto and home loans; commercial banking department serves as realtor, middle market and specialty lending partners; some non-bank activities performed in Capital One Financial Corp., are insurance provision, broker-dealer, asset management-registered investment advisor (Oja, 2014, p. 8).

On the basis of the similarity between different credit card issuers, Table I presents one possible structure of the e-business Solutions Development items. Some of Table II items are similar ideas from the sample value chain paper provided online.

The e-business items were created on the basis of extensive online research from the official websites of each credit card issuers in the market and other journal articles suggesting the type of operations carried out in the credit card issuing businesses. Most of the e-business items in the credit card issuers are from these daily operations in commercial or investment banks.

Approximately 80-90 per cent of the e-business items listed in Table II have mild exposures to technologies. For instances, credit card issuers follow a specific guideline to approve and deliver their credit cards to the potential cardholders. Such guideline includes the following steps:

- Consumers apply for credit card either by filling out the online application form or by responding to the preapproved mail-in promotion letters.
- Credit card approval department examines the applicants’ credit worthiness to judge on the decision to whether or not grant the cardholders’ requests (sometimes this process can be done instantly).

No.	E-business item name	Item descriptions
<i>B2B</i>		
A1	Communication with suppliers	Use mobile apps or electronic communication with suppliers
A2	Information reporting to credit bureau	Report cardholders' credit history to FICO calculation agencies
A3	Foreign transaction	Allow the cardholders to use their cards in other countries
A4	Credit card online/mobile payment system	Link cardholders' checking/saving account with the credit card automatic payment schedule
A5	Middle market services	Serve as intermediary in business transactions
A6	Specialty lending services	Focus on extending credit to a specific category of business
A7	Expense management services	Budget realization services for corporate members
A8	Uncollectible debt sales	Sell uncollectible credit debts to the collection agencies
A9	Insurance provision	Identity protection and payment protection
A10	Brokerage services	Cooperated investment services with other brokerage firms
A11	Asset management services	Registered investment advisor
A12	Corporate cards issuing	Issue specific cards for corporate spending
A13	Merchant processing	Process transactions from merchants using the payment system
A14	Establish merchant account	Create new merchant information that has been authorized to use the payment system
A15	Money transfer	Allow companies to transfer their money through wire or e-wallet solutions
<i>B2C</i>		
B1	Credit card spending tracking on mobile	Downloadable apps for smartphones that can track credit card spending instantaneously
B2	Issuing cards	Underwriting process to credit cards, charge cards and corporate cards
B3	Offering consumer lending products	Auto finance, home loans, personal loans and student loans
B4	Real estate services	Commercial and multifamily real estate, small-ticket commercial real estate
B5	Credit score tracking services	Keep track of cardholders' credit scores
B6	Member rewards global assist hotline	VIP member privilege services
B7	Emergency card replacement	Replace members' credit cards during emergencies
B8	Extended warranties services	Extend warranty periods on auto and other properties
B9	Take in deposits	Commercial banking services
B10	Advanced ticket sales	Allow certain cardholders to have the privilege to purchase discounted airline tickets
B11	Set up cardholder accounts	Create potential customer files
B12	Late fee/interest solicitation	Charge late fees and interest penalties from default payments
B13	Card math	Match the right card with the right cardholders through smart search engines
B14	Smart code recognition feature	Recognize the cardholder through second level passcode such as swift code or biometrics locks

(continued)

Table I.
Items on e-business
applications for
credit card issuing
industry

No.	E-business item name	Item descriptions
B15	Signature verification	Record cardholders' signature in file to prevent fraudulent activities
B16	Feedback emails	Ask cardholder to fill out an online survey through emails to provide feedbacks on recent service experience
<i>B2I</i>		
C1	Online job training software	Perform job training to newly recruit or potential job applications in a virtual environment
C2	Credit history from life	Generate a digital report on a specific members' credit history and other relevant information
C3	ERP system	Make scheduling plan for employees hiring process and benefit distributions to employee
C4	GIS system	Locate the best business sites to build offices that can best serve the cardholders around certain areas
C5	Forecasting system	Forecasting demands for credit cards at a specific area based on the general environment factors from that area
C6	Company disaster preparation plan	Planning software that helps the company managements to get ready for any financial crisis that may hit
C7	IT Platform	Create and utilize a sharing point for all employees in the companies from any branches to promote teamwork
C8	Censoring software	Block certain websites to increase employees working efficiency and reduce idle time
C9	Online database sharing	Grant employees access to members from other branches to provide consistent customer services

Table I.

- Credit card issuers ask for more information from the applicants for further verification or sending letters to applicants explaining the refusal decisions.
- Once approved, applicants will become the potential cardholders waiting for the credit cards to be delivered to them through mails.
- Once received the credit cards, potential cardholders can activate their cards online or by phone.

After this process, potential cardholders will become the existing cardholders with their files permanently stored in the credit card issuers' databases for reporting purposes to credit bureaus.

As the technology constantly upgrading itself, credit card issuers are working individually or together in developing new services and securities products to take advantage of the advanced IT systems. This fact has served as benefits for consumers because advanced ITs will simplify consumers' daily life and provide outstanding transaction experiences for the consumers.

3.2 Relationships of conceptual models and e-business solutions

The results from [Table II](#), which shows a high number of the e-business items served as customer service in primary value chain activities for this industry, should not surprise readers because this industry is a service industry. Outbound logistics, marketing and sales, procurement and firm infrastructure are rarely used as any kind of e-business solutions.

Because credit card issuing industry does not directly conduct business relations with the governments, government is not involved in any of the items listed for [Table III](#). The government provides mostly subsidies through governmental programs. Cases with

E-business item no.	Inbound logistics	Operation	Outbound logistics	Marketing and sales	Customer services	Procurement	Human resource	Firm infrastructure	Technology	e-credit card issuing industry
<i>B2B</i>										
A1								✓		
A2			✓							
A3					✓					
A4									✓	
A5					✓					
A6		✓								
A7					✓					
A8			✓							
A9					✓					
A10					✓					
A11					✓					
A12		✓								
A13		✓								
A14	✓									
A15					✓					
<i>B2C</i>										
B1									✓	
B2		✓								
B3		✓								
B4					✓					
B5									✓	
B6					✓					
B7					✓					
B8					✓					
B9	✓									
B10				✓						
B11	✓									
B12		✓								
B13									✓	
B14									✓	
B15									✓	
B16				✓						
<i>B2I</i>										
C1							✓			
C2						✓				
C3							✓			
C4								✓		
C5						✓				
C6									✓	
C7									✓	
C8							✓			
C9									✓	

Table II.
Relationships of items on e-business applications and E-value chain

government subsidizing credit card issuers or banks in general were demonstrated in recent financial crisis. Citigroup was one of the six major credit card issuers that have been bailed out by the US Government and the Federal Reserve. Bank of America was the other one; however, Bank of America also consolidated its financial resources with Merrill Lynch through M&A (mergers and acquisitions) activities.

Company	Co1	Co2	Co3	Co4	Co5	Co6	Total	(%)
<i>B2B</i>								
A1	1	1	1	1	1	1	6	100.0
A2	1	1	1	1	1	1	6	100.0
A3	1	1	1	0	1	0	4	66.7
A4	1	1	1	1	1	1	6	100.0
A5	1	1	1	0	1	0	4	66.7
A6	0	1	1	1	1	1	5	83.3
A7	1	1	1	0	1	0	4	66.7
A8	1	1	1	1	1	1	6	100.0
A9	1	1	1	1	1	1	6	100.0
A10	0	1	1	0	1	1	4	66.7
A11	0	1	1	0	1	1	4	66.7
A12	1	1	1	0	1	0	4	66.7
A13	1	0	0	0	0	1	2	33.3
A14	1	0	0	0	0	1	2	33.3
A15	1	1	1	0	1	0	4	66.7
<i>Subtotal</i>	12	13	13	6	13	10		
(%)	80.0	86.7	86.7	40.0	86.7	66.7		
<i>B2C</i>								
B1	0	1	1	1	1	1	5	83.3
B2	1	1	1	1	1	1	6	100.0
B3	0	1	1	1	1	1	5	83.3
B4	1	1	1	1	1	1	6	100.0
B5	0	0	0	1	0	0	1	16.7
B6	1	1	1	1	1	1	6	100.0
B7	1	1	1	1	1	1	6	100.0
B8	1	0	0	0	0	1	2	33.3
B9	0	1	1	0	1	1	4	66.7
B10	1	1	1	0	1	1	5	83.3
B11	1	1	1	1	1	1	6	100.0
B12	1	1	1	1	1	1	6	100.0
B13	1	1	0	0	1	1	4	66.7
B14	1	1	1	1	1	1	6	100.0
B15	1	1	1	1	1	1	6	100.0
B16	1	1	1	1	1	1	6	100.0
<i>Subtotal</i>	12	14	13	12	14	15		
(%)	75.0	87.5	81.3	75.0	87.5	93.8		
<i>B2I</i>								
C1	0	1	1	0	1	1	4	66.7
C2	1	1	1	1	1	1	6	100.0
C3	1	1	1	1	1	1	6	100.0
C4	1	1	1	1	1	1	6	100.0
C5	1	1	1	1	1	1	6	100.0
C6	1	1	1	1	1	1	6	100.0
C7	1	1	1	1	1	1	6	100.0
C8	1	1	1	1	1	1	6	100.0
C9	1	1	1	1	1	1	6	100.0
<i>Subtotal</i>	8	9	9	8	9	9		
(%)	88.9	100.0	100.0	88.9	100.0	100.0		

Table III.
Ratings on
implementations of e-
business applications
for top companies in
credit card issuing
industry

(continued)

Table III.

Company	Co1	Co2	Co3	Co4	Co5	Co6	Total	(%)
<i>Overall</i>								
<i>Total</i>	32	36	35	26	36	34		
<i>(%)</i>	83	90	88	65	90	85		

Notes: 1 = implemented, 0 = not implemented; Co1 (American Express Co.), Co2 (Bank of America Corp.), Co3 (JPMorgan Chase & Co.), Co4 (Capital One Financial Co.), Co5 (Citigroup Inc.) and Co6 (Discover Financial Service Inc.)

Vertical integration was a business activity in supply chain management (Krajewski *et al.*, 2007). Most of the credit card issuers implemented backward integration to provide financial resources for itself. For example, Citibank and Chase Bank, subsidiaries of Citigroup and J.P. Morgan Chase, respectively, along with Bank of America offered commercial banking services that take cardholders' deposits and use them to pay for the credit card bills owed by the cardholders or invest the deposits through the assistance of investment banks or its own investment banking services.

3.3 Top companies in the credit card issuing industry

According to Cardrates Co. (www.cardrates.com/news/credit-card-companies/, 2017), the top credit card issuing companies are American Express Co., Bank of America Corp., JPMorgan Chase & Co., Capital One Financial Co., Citigroup Inc. and Discover Financial Service Inc., Cash America International Inc., Encore Capital Group Inc., Ezc Corp Inc., First Cash Financial services, Green Dot Corp., Navient Corp., PRA Group Inc., SLM Corp., World Acceptance Corp., Comerica Inc., US Bancorp, Wells Fargo & Co. and Visa and MasterCard. These top companies are retrieved on the basis of the market shares in the credit card issuing industry. It needs to mention that two companies with large assets are Visa and MasterCard; however, both of these companies are multinational companies and can be classified as credit card processing companies that provide credit card processing network systems for other companies in the credit card issuing industry. Meanwhile, other two companies Discover Financial Service and American Express also provide credit card processing networks for themselves and other credit card issuing companies.

The top six largest credit card issuing companies based on market shares in the credit card issuing industry with their market shares are American Express Co. (20.2 per cent), Bank of America Corp. (17.5 per cent), JPMorgan Chase & Co. (16.9 per cent), Capital One Financial Co. (14.2 per cent), Citigroup Inc. (9.4 per cent) and Discover Financial Service Inc. (7.2 per cent). As these top six companies have a total percentage of 85.4 market shares among the credit card issuing industry, the six largest credit card issuing companies are analyzed in this paper. Table III shows the e-business implementation status for these six top companies in the credit card issuing industry.

The frequency of the six major companies' e-business items implementation status is illustrated in Table III. The total number of items and percentages for each of the six companies are presented in Table III. The percentage calculation in Table III is computed with the formula: (count for each company)/(total number of items). For example, B2C percentage for Capital One Financial Co. is $6/6 = 100$ as count is 6 and total number of items is 6.

4. Findings

4.1 Pattern analysis across e-business items

Table IV shows the pattern analysis across the 40 e-business items. Specifically, the numbers of companies that provide each e-business solution item are tallied to separate the most widely used items from those that are not, i.e. three categories are identified: the high implementation, medium implementation and low implementation items.

Table IV shows that there are 26 e-business implementable items widely used with high implementation, which are usually found in all the B2B (six items), B2C (12 items) and B2I (eight items) categories. The ten items with low implementations are shown mostly in B2B (seven items) and least in B2C (two items) and B2I (one item). The rest of the four less commonly used e-business solution items with low implementation are shown in the B2B (two items) and B2C (two items). Even though the two items in B2B and the other two items in B2C are beneficial to the credit card issuing companies, these are not widely adopted.

4.2 Pattern analysis across companies

The pattern analysis across companies is conducted on the basis of tallying the numbers of items provided by various companies to analyze the versatility of those items. Table V illustrates the total number of points and percentages being computed for each company.

The points were compiled by adding the scores, and then to compute the percentages, the total scores were divided by the total number of possible points. For example, C1 scored 25 points in B2B, 96.1 per cent is inserted for C1 in the percentage (%) column under the B2B heading ($25/26 * 100$ per cent). C2 scored 26 out 26 points in B2B, a 100 per cent ($26/26 * 100$) is placed in percentage column under the B2B heading.

Table IV.
Pattern analysis
across e-business
items

E-Business items	(%) of each	
	item	Implementation category
A1-A2, A4, A8-A9, B2, B4, B6-B7, B11-B12, B14-B16, C2-C9	100.0	High implementation (26 items)
A6, B1, B3, B10	83.3	
A3, A5, A7, A10-A12, A15, B9, B13, C1	66.7	Medium implementation (10 items)
B8, A13-A14	33.3	Low Implementation (4 items)
B5	16.7	

Table V.
Pattern analysis
across companies

Companies	B2B (15 items)		B2C (16 items)		B2I (9 items)		Total (40 items)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Co1	12	80.0	12	75.0	8	88.9	32	83.0
Co2	13	86.7	14	87.5	9	100.0	36	90.0
Co3	13	86.7	13	81.3	9	100.0	35	88.0
Co4	6	40.0	12	75.0	8	88.9	26	65.0
Co5	13	86.7	14	87.5	9	100.0	36	90.0
Co6	10	66.7	15	93.8	9	100.0	34	85.0
Average	11.2	74.44	13.3	83.33	8.7	96.30	33.2	83.50

Some major findings include:

- The overall percentages for the six companies range from 65.0 to 90.0. Industry leaders are Co2 and Co5 with the highest percentage of 90, followed by Co3 with 88 per cent, Co6 with 85 per cent and Co1 with 83 per cent. C4 has the lowest percentage of 65.
- In B2B, the companies with an average percentage over 74.44 are Co1, Co2, Co3 and Co5. In B2C, the companies over 83.33 per cent are Co2, Co5 and Co6; and in B2I, the companies over 96.30 per cent are Co2, Co3, Co5 and Co6. Because of their large levels of capital, these companies are able to invest in innovative products and operations via using IT technologies. The variability was introduced for each company's e-business strategies. Some companies may focus more on B2B, whereas others may focus more on B2C or B2I.
- The averages for B2B (74.44 per cent), B2C (83.33 per cent) and B2I (96.30 per cent) with individual companies' percentages ranges between 40.0 and 100.00. The variability comes from each company's e-business strategy. Companies are consistently evaluating, altering or improving their strategies. Credit card issuing companies define success in a variety of ways. Some companies set their goals for gaining market share and customer relationships management, whereas others focus on lowering costs or generating more revenues. Companies need to periodically re-evaluate their e-business strategies to make ensure that these strategies are appropriate for their business overall.

5. Discussions, implications and conclusions

This paper developed an e-credit card issuing model for the credit card issuing companies by integrating IT into their operations. The model was developed on the basis of a strategic value chain supports theories to identify the weaknesses and strength in the credit card issuing industry. Specifically, there are several primary findings and contributions from the research.

First, by breaking down the strategic value chain model in the credit card issuing industry, these credit card issuing companies can determine whether their strengths and weaknesses are based on the tactical e-business solution items. The findings, from the current research, indicate that most of the credit card issuers use information system as a training tool or internal use for operation purpose. However, few credit card issuers are willing to create some sort of credit score tracking services for their existing cardholders. To provide better customer service and distinguish itself more, credit card issuers should consider to add a feature on their official websites for member logins to be a credit score tracker that can give members a clear sense of where their scores are at and how to improve them. This credit score tracking services will serve as a potential marketing tool that will encourage members to take actions to improve their credit scores enough to have an opportunity as a potential member for high ranking cards with more premium benefits.

Second, the most used e-business items in [Table III](#) are widely accepted in all of the financial industries. Even though different companies may have different business lines, most e-business solution items have been implemented by all six companies. Credit card issuers are able to combine the services from all of the financial industries together with the general credit card companies' customer service. One would think that credit card issuers should just focus on issuing credit cards to consumers, but, without the add-on service packages including insurance provision, asset management services and commercial

banking services, credit card issuers cannot differentiate themselves from customer service standpoint. Consumers are expecting more services from a single financial institution than they used to.

Third, the evidence shown in Table III shows that the highest frequency in implementation status is for companies such as Bank of America and Citigroup, and the lowest is for Capital One. Bank of America and Citigroup both have commercial banking sectors that can provide more financial services to customers; hence, both companies will have many e-business items to implement. Companies like Capital One are just credit card issuers. They do not have commercial banking sectors and may not wish to have these sectors in the future. For the company such as Capital One, the competitive advantages should focus mostly on credit cards and its convenience. However, customer experiences with Capital One are not as satisfying as one might think of. Customer finds frustration when calling up customer services representatives for help, and many steps are needed to be taken just to verify customer identity.

Fourth, before the financial crisis of 2008-2009, different credit card issuers focused on specific customers. During the crisis, many larger financial institutions purchased the smaller institutions and are now able to distinguish themselves through differentiation and cost leadership strategy that would not have been possible in the past. Company such as American Express still differentiates itself as the premium card issuers because its brand image cannot easily be changed. Credit card industry in general is now a risky place to consider potential job opportunities. In the short term, recent US economic is still in a recovery mode, and interest rates are rising slowly. The inevitable increase in interest rates, in the long run, will, however, make debts cheaper to pay back.

Fifth, managers need to be aware of the existing e-business implementation pattern, and focus more on the items that have low implementation, such as B5 (credit score tracking services), B8 (extended warranties services), A13 (merchant processing) and A14 (establish merchant account).

There are two limitations existing in the current research. One is the lack of direct linkage with the economic impact. Future empirical research can be conducted to measure the impact of each e-business solution item on the economy for these credit card issuing companies. The other limitation is that this paper only focuses on B2B, B2C and B2I. Further research can also include B2G and C2B, with more emphasis on mobile business as well.

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