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Development of Tactical Solutions for the E-Credit Card Issuing Industry

Abstract

This paper aims at developing a set of tactical electronic business solutions for the electronic credit card issuing industry. 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 based on the SCCI model. Third, pattern analysis is conducted based on data collected from dominant credit card issuing companies to further investigate the implementation status of these electronic business solutions in the credit card issuing industry. The findings show that there are 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. 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 issuer, electronic business, strategic electronic value chain

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 in a large scale, which will bring great benefits to the credit issuing industry.

Krajewski, Ritzman, and Malhotra (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 states 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 states 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, like 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% 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% of the market, while college students group has almost 15% 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, 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 Credit CARD Act of 2009 from “limit on excessive fees and interest rate increases on existing balances” (Carusotto, 2014, p.16).

1.1 IT Impact on US & 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 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, Mohamad, Karami, Bajuri, and Asgharizade, 2016; Pan, Teoh, and Seow; 2014).

Fed's 2013 survey stated that "87% of the US adult population has a mobile phone, and 51% of all smartphone users had used mobile banking in the past 12 months. This translates to 28% for mobile users and 48% 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%) and 2013 (17%)" (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% 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% 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 information technology, 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” (Paisittananda & Olson, 2006, p.1251).

The objective of this paper is to analysis the operation management fields of the credit card issuing industry. The paper will mainly be examined the industry based on the two main E-chains of the supply chain categories. They are E-value chain and E-customer chain. The paper will utilize 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 considering 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 in order 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 provides discussions, implications and conclusions.

2. Conceptual Model

Krajewski, Ritzman, and Malhotra (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 chains can help the organization to have an efficient operating process which can supplement the value generating activities and increase the companies’ performance.

Krajewski, Ritzman & Malhotra (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, Lumpkin, Eisner and McNamara (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 exemplify “supply chain” because of the casual relationship between “value chain” and “customer chain” with “supply chain” (Liu, Wei & Rodriguez, 2014; Liu, Yang, Wei & Wang, 2015; Gu, Xu & Wei, 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 Seven: 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 Seven: E-Supply Chains, Collaborative Commerce, Intrabusiness EC, and Corporate Portals, p.279). E-value chain involves different categories of e-commerce, such as B2B, B2C, etc. (Huber, Piercy & McKeown, 2007). E-value chain is “an interrelated series of processes...that uses information technology to enhance performance in order to create a competitive advantage” (Howell & Wei, 2010, p.73). Many other definitions for

value chain are easy to be found along other academic papers (Knod & Schongerger, 2001; Wei, Platt, Boyd & Jasquith, 2006; Gan, Zhao & Wei, 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) states that in a value chain, an electronic strategy (e-strategy) model is developed for any e-businesses focusing on value increasing. Therefore, the strategic credit card issuing (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, since credit cards are one type of financing.

Banks in general are commercial banks and investment banks. They are sometimes the direct source of payment for cardholders’ credit card bills. Not only does the income to the credit card issuers mostly from deposits in those banks, but also does the investment gains/losses to the credit card issuers from investing activities in some of the investment 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 utilize to deliver their cards to the cardholders. Online banking and mobile banking services 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 (Wei & Howell, 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 (Wei & Howell, 2010, p.74). This 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

subscribe for text messages alert and remainder (Wei & Howell, 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 like 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 expresses interest in this online service as well (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 developer like Facebook, Twitter and any other websites that have the most hit from the 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 to 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 & 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 & Wei, 2010, p.74). From frequently asked questions (FAQs), online chat and advice, and phone support, customers can choose the way they prefer to be serviced (Green & 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 example 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.

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.

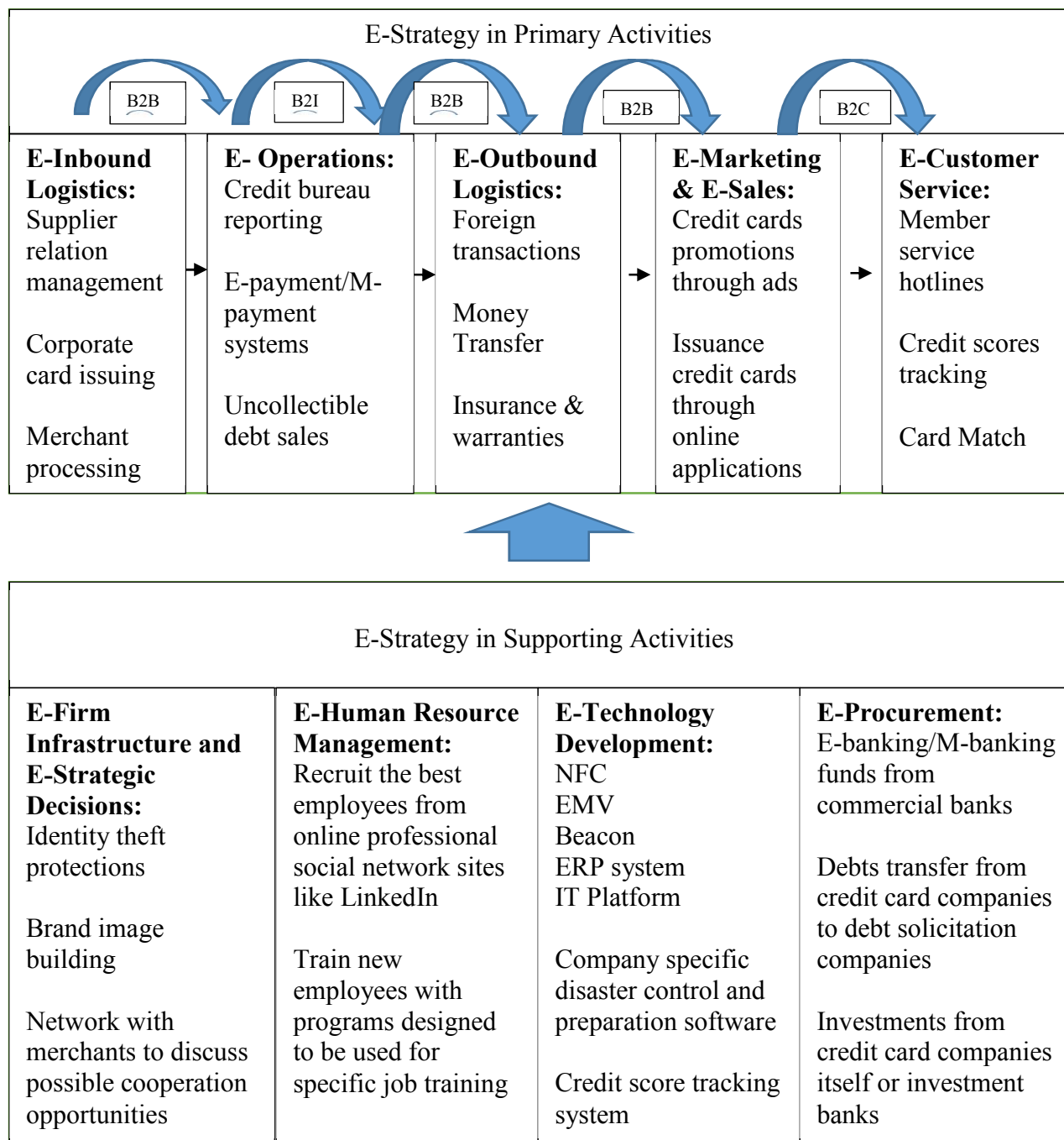


Figure 1. The Strategic Credit Card Issuing (SCCI) Model

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. They are credit card business, consumer banking, commercial banking and non-bank activities. Each of the three business activities contains subcategorized activities that combined 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). Based on similarity between different credit card issuers, Table 1 presented one possible structure of the E-Business Solutions Development items. Some of Table 1 items are similar ideas from the sample value chain paper provided online.

The E-Business items were created based on 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. Since no clear cut between credit card issuers and bankers, most of the E-Business items are related to commercial or investment banks' daily operations.

Approximately 80-90% of the E-Business items listed in Table 2 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 steps like: 1) Consumers apply for credit card either by filling out the online application form or by responding to the pre-approved mail-in promotion letters; 2) Credit card approval department examines the applicants' credit worthiness to judge on the decision to whether or not granting the cardholders' requests (sometimes this process can be done instantly); 3) Credit card issuers asking for more information from the applicants for further verification or sending letters to applicants explaining the refusal decisions; 4) Once approved, applicants will become the potential cardholders waiting for the credit cards to be delivered to them through mails; 5) 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 information technologies will simplify consumers' daily life and provide outstanding transaction experiences for the consumers.

Table 1. Items on E-Business Applications for Credit Card Issuing Industry

No.	E-Business Item Name	Item Descriptions
B2B		
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	Link cardholders' checking/ saving account with the credit card automatic payment schedule

	payment system	
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 & 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
B2C		
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 & corporate cards
B3	Offering consumer lending products	Auto finance, home loans, personal loans & 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
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
B2I		
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 in order 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

3.2. Relationships of Conceptual Models and E-Business Solutions

The results from Table 2, which shown a high number of the E-Business items served as customer service in primary value chain activities for this industry, should not surprise readers since this industry is a service industry. Outbound Logistics, Marketing and Sales, Procurement and firm infrastructure are rarely used as any kinds of E-Business solutions.

Since 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 3. The government provides mostly subsidies through governmental programs. Cases with 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 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.

Vertical integration was a business activity in supply chain management (Krajewski, Ritzman, and Malhotra, 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 takes 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.

Table 2. Relationships of Items on E-Business Applications and E-Value Chain

	Inbound Logistics	Operation	Outbound Logistics	Marketing & Sales	Customer Services	Procurement	Human Resource	Firm Infrastructure
B2B								
A1								✓
A2			✓					
A3					✓			

A4								
A5					✓			
A6		✓						
A7					✓			
A8			✓					
A9					✓			
A10					✓			
A11					✓			
A12		✓						
A13		✓						
A14	✓							
A15					✓			
B2C								
B1								
B2		✓						
B3		✓						
B4					✓			
B5								
B6					✓			
B7					✓			
B8					✓			
B9	✓							
B10				✓				
B11	✓							
B12		✓						
B13								
B14								
B15								
B16				✓				
B2I								
C1							✓	
C2						✓		
C3							✓	
C4								✓
C5						✓		
C6								
C7								
C8							✓	

C9								
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3.3. Top Companies in the Credit Card Issuing Industry

According to Cardrates Co., (<http://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., Ezcoup 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., Visa and MasterCard. These top companies are retrieved based on 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%), Bank of America Corp. (17.5%), JPMorgan Chase & Co. (16.9%), Capital One Financial Co. (14.2%), Citigroup Inc. (9.4%) and Discover Financial Service Inc. (7.2%). 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 3 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 3. The total number of items and percentages for each of the six companies are presented in Table 3. The percentage calculation in Table 3 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 since count is 6 and total number of items is 6.

Table 3. Ratings on Implementations of E-Business Applications for Top Companies in Credit Card Issuing Industry

Company	Co1	Co2	Co3	Co4	Co5	Co6	Total	%
B2B								
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%
Subtotal	12	13	13	6	13	10		
%	80.0%	86.7%	86.7%	40.0%	86.7%	66.7%		
B2C								
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%
Subtotal	12	14	13	12	14	15		
%	75.0%	87.5%	81.3%	75.0%	87.5%	93.8%		
B2I								
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%
Subtotal	8	9	9	8	9	9		
%	88.9%	100.0%	100.0%	88.9%	100.0%	100.0%		
Overall								
Total	32	36	35	26	36	34		
%	83%	90%	88%	65%	90%	85%		

Note: 1 = implemented, 0 = not implemented

Note: 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.)

4. Findings

4.1 Pattern Analysis across E-Business Items

Table 4 shows the pattern analysis across the forty 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 4. 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 4 shows that there are twenty-six e-business implementable items are widely used with high implementation, which are usually found in all the B2B (6 items), B2C (12 items) and B2I (8 items) categories. The ten items with low implementations are shown mostly in B2B (7 items) and least in B2C (2 items) and B2I (1 item). The rest of the four less commonly used e-business solution items with low implementation are shown in the B2B (2 items) and B2C (2 item). Even though the two items in B2B and the other two items in B2C are beneficial to the credit card issuing companies, they are not widely adopted.

5.2 Pattern Analysis across Companies

The pattern analysis across companies is conducted based on tallying the numbers of items provided by various companies to analyze the versatility of those items. Table 5 illustrates the total number of points and percentages being computed for each company.

The points were compiled by adding the scores, 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% is inserted for C1 in the percentage (%) column under the B2B heading ($25/26 * 100\%$). C2 scores 26 out 26 points in B2B, a 100% ($26/26 * 100$) is placed in percentage column under the B2B heading.

Table 5. 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%-90.0%. Industry leaders are Co2 and Co5 with the highest percentage of 90%, followed by Co3 with 88%, Co6 with 85%, and Co1 with 83%. Co4 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% are Co2, Co5 and Co6; and in B2I, the companies over 96.30% 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 more focus on B2B while other more on B2C or B2I.
- The averages for the B2B (74.44%), B2C (83.33%) and B2I (96.30%) with individual companies' percentages ranges between 40.0-100.00%. 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, while 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 based 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 where 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 using 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 3 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 3 shows that the highest frequency in implementation status is for companies like Bank of America and Citigroup, and the lowest is 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 companies like 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 were needed to be taken just to verify customer identity.

Fourth, before the financial crisis of 2008 to 2009, Different credit card issuers focus 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. Companies like American Express still differentiate themselves as the premium card issuers since their 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, C2B, with more emphasis on mobile business as well.

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