

ELECTRONIC PAYMENT SYSTEM DECISION SUPPORT WITH
BLOOM'S TAXONOMY

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ELECTRONIC PAYMENT SYSTEM DECISION SUPPORT

WITH BLOOM'S TAXOMONY

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ABSTRACT

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The primary goal of this paper is to develop an online course that enables students to learn about electronic payment systems by applying Bloom's taxonomy. There are six levels in Bloom's taxonomy, with knowledge representing the simplest level and evaluation representing the highest and most complex level. These levels of intellectual behavior are vital in learning. To help students understand and analyze the concepts of electronic payment systems, three labs have been developed that map with the lower levels of Bloom's taxonomy. The first lab introduces students to the electronic payment system concepts; the second lab helps them understand the difference between the Amazon and PayPal payment systems; and the third lab recommends a payment system that best fits with their online business based on the choices made.

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CHAPTER 1. INTRODUCTION

With the increase of digital transactions, the management of digital rights systems to protect the end-user consumers of new applications while dealing with trade systems is necessary, together with the introduction of new information processing and dissemination services. Products can be purchased and delivered via network technologies, so it is desirable that the payment procedures also be carried through these networking routes. New commercial models have put a great deal of pressure on the development of new specialized payment schemes that support the privacy and security of the customer in an economically feasible way while not presenting too much cost and network downtime for the companies offering these services. Meanwhile, there also exists a plethora of information on various security and privacy e-commerce systems that can be used in online markets. In this paper, we take a close look at two of these payment systems (Amazon and PayPal), pointing out the requirements that they should fulfill for their desired customers and presenting a brief introduction on the various principles of network e-payment systems and marketing.

Because payment is an integral part of the commerce system, electronic payment systems are also an important part of the electronic-commerce system. The emergence of electronic commerce has created new and interesting financial needs for most organizations that traditional payment and transaction processes cannot handle.

The emergence of electronic payment systems has created new and increasing fundamentals in the networking world, necessitating increased security and privacy protection systems that the traditional systems were initially not equipped to handle (Lawrence, 2000). Recognizing the potential of this market, virtually all interested parties

(most educational institutions, government and privately-owned business community financial services providers) have cashed in on the market, exploring new and innovative ways to offer these services as well as address the various issues that surround the electronic payment systems and the use of the digital currency.

Some of the proposed electronic payment methods are simply digitized versions of the preexisting payment methods (such as the use of checks and credit cards) while others have been developed based on digital currency technology, increasing the potential to have a definitive impact on the direction of financial and monetary schemes. Various developers of available electronic payment schemes predict that the future of financial institutions will be largely based on the use of electronic finance, so fundamental innovations are necessary in order to ensure the security of these financial institutions from outside entry and intrusion. In this regard, it is not possible to study these financial institutions in isolation as the threats faced by one of the institutions are probably faced by all. Failure to consider these threats to security and privilege can result in undue loss of focus on the various available initiatives that have been created with respect to the implications that they would have on the existing traditional economies (Brainov, 1999).

Sending and receiving electronic payments incurs costs. When goods and services are paid for using electronic payment methods, the sender (buyer in this case) must pay a certain commission to the financial institution offering the electronic payment scheme so as to process the details of the transaction together with any operating costs of the system that is to be used in processing the transaction.

1.1. Bloom's Taxonomy Of Cognitive Domain

This paper is based on the taxonomic definitions as given by Bloom et al. (1956) in what is commonly called Bloom's taxonomy of classification and learning. These are classification techniques that are used to categorize the ways in which learning and education can be used in any form of hierarchical thinking. According to Bloom et al. a hierarchy of educational objectives can be determined for any cognitive domain and these taxonomic learning levels can be created, having a visual, illustrative representation like the one shown below in Figure 1.



Figure 1. Building blocks of Bloom's taxonomy of cognitive domain.

1.1.1. Knowledge

This represents the lowest part of the classification of learning and education according to the cognitive domain and is classified as the ability of people to remember what has been taught to them previously. This may either involve the capability of people to recall a wide range of materials or specific facts about some piece of information

previously disseminated to them. Either way all that is required for one to be knowledgeable, according to Bloom's taxonomy, is the capability of the person to bring into mind some part of the appropriate information (Brainov, 1999).

1.1.2. Comprehension

This is the second lowest part of the classification and is defined as the capability of people to quickly grasp the meaning of certain material. This can be easily shown by their ability to interpret the material from one form to another (in case they are words, they can be translated to numbers), interpreting the material (analyzing and summarizing its content), or giving an estimate of the future trends that are likely to be witnessed. In this respect, comprehension goes a step further than simply being able to remember the subject matter of the topic in question (Cavarretta and de Silva, 1995).

1.1.3. Application

This is the third lowest form of learning and refers to the capability of people to robustly make use of what has been learned in new and real circumstances. This may involve the capability to make use of such things as rules, concepts, ideas, maxims, theories, and/or principles in order to avert or create some desired outcome in a given situation. For this level of learning, people must have a higher level of understanding of the subject matter than the other lower levels of comprehension.

1.1.4. Analysis

This refers to people's ability to break down the material resources provided into their component parts and make use of these parts in order to understand the organizational structure. This may involve identifying the component parts, analyzing the existing relationships that these parts have with each other, with others outside the organization, and

with themselves, as well as determining the organizational principles that apply for each of the component structures (Brainov, 1999). Outcomes in this case represent people with high intellectual capacities, who understand both the content of the material and its structural form.

1.1.5. Synthesis

Synthesis refers to people's capability to put together the component parts of the material in order to form a new whole. This may sometimes involve the creation of a new, unique communication, new arrangements of operations, or a redefinition of the abstract relationships that exist between the components. Learning outcomes here stress the creative, innovative and imaginative behavior of people, emphasizing their capability to create new materials or patterns from old ones.

1.1.6. Evaluation

Evaluation refers to people's capability to correctly judge the value of a given material for a specific purpose. This form of judgment has to be based on a specific, definitive criteria, either internal (based on its relevance to the person or organization) or external (based on its relevance to the purpose of its existence). Outcomes here include the conscious capability of people to judge the value of a particular resource based on specific criteria (Cavarretta and de Silva, 1995).

The next chapter discusses how the three labs were designed using the lower levels of Bloom's taxonomy.

CHAPTER 2. DESIGNING LABS USING BLOOM'S TAXONOMY

This section gives a brief introduction of the three labs that were developed to help students learn about electronic payment systems. This section also provides a brief description of how each lab has been developed using levels of Bloom's taxonomy.

2.1. Electronic Payment System Lab Application

The three labs that were developed in order to teach the students about electronic payment systems were:

1. Lab I: Introduction to Electronic Payment Systems
2. Lab II: Comparison between Amazon and PayPal Payment Systems
3. Lab III: Recommending a Payment System using the Decision Support Tool

Lab I introduces the students to the terminology and basic concepts of electronic payment systems; Lab II helps the students understand the differences between Amazon and PayPal payment systems, and Lab III makes the students choose the factors they consider important in their own business and the Decision Support Tool provides them with the payment system that best fits their needs. A snapshot of the application is provided below in Figure 2. The following section explains how each lab applies the levels of Bloom's taxonomy.

2.2. Lab I: Introduction To Electronic Payment Systems

2.2.1. Knowledge And Comprehension

Students are provided with the terminology, concepts, and principles at this level and at the end of the lab, they are asked to answer questions related to the material.

In Lab 1, students are introduced to the basic terminology about electronic payment systems. The next section explains the terminology concepts.



Figure 2. Lab application welcome screen.

2.2.1.1. Terminologies

The terminology concepts are provided in the format of a quiz with two options so that it triggers students to think rather than memorize. The student is asked to choose an answer from the two available choices. Immediate feedback of whether the answer is correct or incorrect is provided when the student responds with an answer. A snapshot of the application is provided below in Figure 3.

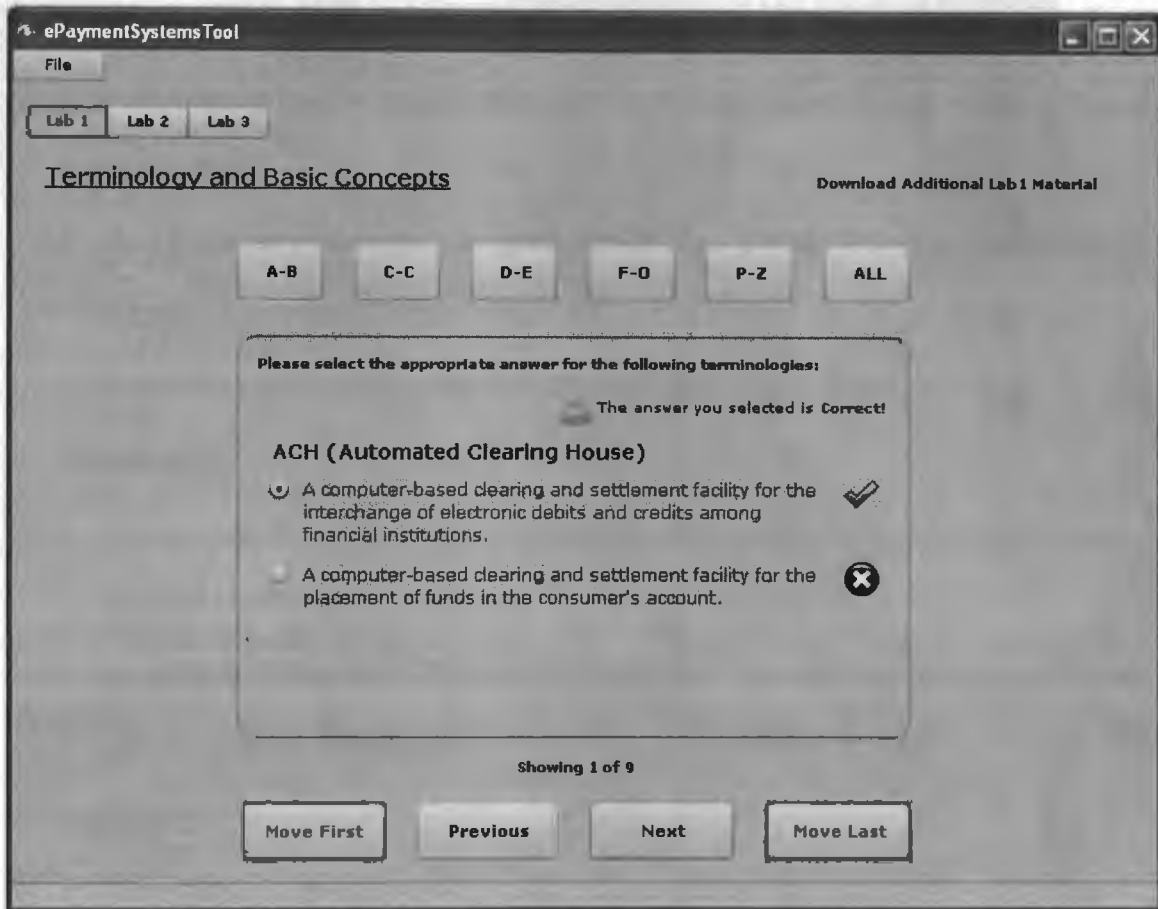


Figure 3. Lab I application.

- ACH (Automated Clearing House):
 - A computer-based clearing and settlement facility for the interchange of electronic debits and credits among financial institutions. (Correct)
 - A computer-based clearing and settlement facility for the placement of funds in the consumer's account. (Incorrect)
- Affidavit:
 - A sworn statement by the vendor declaring that a particular ACH transaction was authorized or that the authorization for that transaction has been revoked. (Incorrect)

- A sworn statement by a consumer declaring that a particular ACH transaction was authorized or that the authorization for that transaction has been revoked. (Correct)
- Authentication:
 - An agreement by a receiver to allow for the posting of debit or credit items to an account. (Incorrect)
 - A reliable process that determines the identity of a party. (Correct)
- Authorization:
 - An agreement by a receiver to allow for the posting of debit or credit items to an account. (Correct)
 - An entry to the record of an account to represent the transfer or placement of funds into the account. (Incorrect)
- Availability:
 - The number of days required to collect items before the customer has use of the funds. (Correct)
 - The number of days required to collect items before the financial institution has use of the funds (Incorrect)
- Banking day:
 - Any calendar day except Sunday and legally defined holidays. (Incorrect)
 - Any calendar day except Saturday, Sunday and legally defined holidays. (Correct)
- Batch:
 - The accumulation of captured (sale) transactions waiting to be settled. (Correct)
 - The accumulation of captured transactions that have been settled. (Incorrect)
- Batch Processing:

- A type of data processing and data communications transmission in which different transactions are grouped together and transmitted for processing, usually by the same computer and under the same application. (Incorrect)
- A type of data processing and data communications transmission in which related transactions are grouped together and transmitted for processing, usually by the same computer and under the same application. (Correct)
- Business Day:
 - Any calendar day except Sunday and legally defined holidays. (Incorrect)
 - Any day on which a participating Depository Financial Institution (or ACH Operator) is open for carrying on substantially all of its business functions. (Correct)
- CAI (Customer Account Information):
 - A detail field within Remittance Information, usually the account number assigned to that customer by the biller. This can also be used to mean the customer's billing name and address as well as any other information that the biller uses to identify the customer. (Correct)
 - A deposit held by a participating DFI (Depository Financial Institution) and established by a natural person primarily for personal, family or household use, and not for commercial use. (Incorrect)
- Capture:
 - Converting the authorization amount into a billable transaction record within a batch. Transactions cannot be captured unless previously authorized and the goods or services have been shipped or transmitted to the consumer. (Correct)

- Outbound invoices, statements and bills from clients to their customers and inbound payments received from customers to clients. (Incorrect)
- Capture Date:
 - The date on which a transaction is processed by an acquirer. (Correct)
 - Any day on which a participating Depository Financial Institution (or ACH Operator) is open for carrying on substantially all of its business functions. (Incorrect)
- CIE (Customer Initiated Entry):
 - A payment transaction that pushes funds from the CSP or CPP to the BPP. (Incorrect)
 - An automated consumer transaction that allows consumers to originate an ACH bill payment through their financial institution or a third party bill payment service. (Correct)
- Company Batch/Header Record:
 - The records contained within an ACH file that describe the originators of an ACH transactions and the types of transactions within that batch. (Correct)
 - An entry to the record of an account to represent the transfer or placement of funds into the account. (Incorrect)
- Consumer Account:
 - A deposit held by a participating DFI (Depository Financial Institution) and established by a natural person primarily for personal, family or household use, and not for commercial use. (Correct)

- Outbound invoices, statements and bills from clients to their customers and inbound payments received from customers to clients. (Incorrect)
- Content Management:
 - The process by which companies bill customers over the Internet. (Incorrect)
 - The delivery of business-critical information to consumers or business-to-business customers by drawing data from disparate sources. The composed documents may contain billing data, customer service information, marketing messages or other types of content. (Correct)
- Credit:
 - An entry to the record of an account to represent the transfer or placement of funds into the account. (Correct)
 - An entry to the record of an account to represent the transfer or removal of funds from the account. (Incorrect)
- Credit Transaction:
 - A payment transaction that pushes funds from the CSP or CPP to the BPP. (Correct)
 - A payment transaction authorized by the customer, originated by the biller that pulls funds from the customer's account. (Incorrect)
- Customer:
 - A financial institution that initiates a wire transfer or automated clearing house (ACH) payment. (Incorrect)
 - An individual or entity that receives goods or services, which are subject to bills or statements. The typical receiver of a bill. (Correct)

- Customer Transactions:
 - Outbound invoices, statements and bills from clients to their customers and inbound payments received from customers to clients. (Correct)
 - A payment transaction that pushes funds from the CSP or CPP to the BPP. (Incorrect)
- Data Encryption:
 - The scrambling of sensitive information, such as account numbers or access codes, to prevent unauthorized use. (Correct)
 - A type of data processing and data communications transmission in which related transactions are grouped together and transmitted for processing, usually by the same computer and under the same application. (Incorrect)
- Debit:
 - An entry to the record of an account to represent the transfer or placement of funds into the account. (Incorrect)
 - An entry to the record of an account to represent the transfer or removal of funds from the account. (Correct)
- Debit Transaction:
 - A payment transaction authorized by the customer, originated by the biller that pulls funds from the customer's account. (Correct)
 - A payment transaction that pushes funds from the CSP or CPP to the BPP. (Incorrect)
- Demand Draft:
 - A method used to facilitate and process payment. (Incorrect)

- A single payment check without a scannable remittance document attached. This draft may be drawn on the customer's account or the CPP account. (Correct)
- Depository Financial Institution:
 - A financial institution able to receive deposits from its customers or credits from the Federal Reserve Bank. (Correct)
 - A company that provides a connection to the Internet. Service providers sell access to the network. (Incorrect)
- Direct Deposit:
 - The disbursement of funds to consumer accounts. (Correct)
 - A financial institution that initiates a wire transfer or automated clearing house (ACH) payment. (Incorrect)
- Direct Payment:
 - The collection of funds from consumer to business accounts. (Correct)
 - The disbursement of funds to consumer accounts. (Incorrect)
- E-commerce:
 - Activities affecting a deposit account, carried out at the request of the account owner. (Incorrect)
 - Any online transaction of buying and selling where business is done via Electronic Data Interchange (EDI). (Correct)
- Electronic bill presentation and payment (ABPP):
 - Funds currently available for immediate use. (Incorrect)
 - A process that enables bills to be created, delivered, and paid over the Internet. (Correct)

- Electronic Funds Transfer:
 - A computer-driven system that is used by the buyer/seller or sender/receiver in order to perform the online transaction of sending or receiving money. (Correct)
 - The time at which the funds from an electronic funds transfer are made available to the customer. (Incorrect)
- Electronic money:
 - The electronic depiction of the physical money that is owed or to be sent with regards to the online transaction being carried out. It is the system of credits and debits used to send digitized money, of one value or the other, within the same system or across distributed networks. (Correct)
 - A computer-driven system used by the buyer/seller or sender/receiver in order to perform the online transaction of sending or receiving money. (Incorrect)
- Electronic Payment:
 - The disbursement of funds to consumer accounts. (Incorrect)
 - A collective term used to define the different kinds of electronic funds transfer methods that are available at the disposal of the sender and receiver. (Correct)
- ESP (Electronic Statement Presentment):
 - A system or network used to process payments. (Incorrect)
 - The process by which companies bill customers over the Internet. (Correct)
- Exception Item:
 - The number used in an ACH transaction by the originator to identify the receiver. (Incorrect)

- Any entry that requires special attention or processing, such as return entries, stop payments, notifications of change, dishonored returns, etc. (Correct)
- Funds-Available:
 - Funds currently available for immediate use. (Correct)
 - A computer-driven system used by the buyer/seller or sender/receiver in order to perform the online transaction of sending or receiving money. (Incorrect)
- Funds Availability:
 - The time at which the funds from an electronic funds transfer are made available to the customer. (Correct)
 - The number of days required to collect items before the customer has use of the funds. (Incorrect)
- Individual Identification Number:
 - The number used in an ACH transaction by the originator to identify the receiver. (Correct)
 - The disbursement of funds to consumer accounts. (Incorrect)
- ISP (Internet Service Provider):
 - A financial institution that initiates a wire transfer or automated clearing house (ACH) payment. (Incorrect)
 - A company that provides a connection to the Internet. Service providers sell access to the network. (Correct)
- One-Time Payment Authorization:
 - An individual or company authorizes a one-time debit of their account. (Correct)

- An agreement by a receiver to allow for the posting of debit or credit items to an account. (Incorrect)
- Originator:
 - A financial institution that initiates a wire transfer or automated clearing house (ACH) payment. (Correct)
 - A company that provides a connection to the Internet. (Incorrect)
- Payment:
 - A collective term that is used to define the different kinds of electronic funds transfer methods that are available at the disposal of the sender and receiver. (Incorrect)
 - A vehicle to affect the transfer of value. Typically, a transfer of funds from one bank depository to another, but may also transfer funds to or from a debt instrument, such as a credit card. (Correct)
- Payment Due Date:
 - The date on which a transaction is processed by an acquirer. (Incorrect)
 - The date by which the biller requires payment from the customer. (Correct)
- Payment Instructions:
 - Method used to facilitate and process payment. (Incorrect)
 - The instructions for routing/posting payment. (Correct)
- Payment Method:
 - Method used to facilitate and process payment. (Correct)
 - The instructions for routing/posting payment. (Incorrect)
- Payment Posted Date:

- The date by which a payment is posted to an account. (Correct)
- The date by which the biller requires payment from the customer. (Incorrect)
- Payment Service Provider:
 - A financial institution that initiates a wire transfer or automated clearing house (ACH) payment. (Incorrect)
 - A financial institution that offers online merchants and sellers the chance to receive electronic payments for the sale of their products and services. (Correct)
- Payment System:
 - A system or network used to process payments. (Correct)
 - Method used to facilitate and process payment. (Incorrect)
- Receiver:
 - An individual, corporation or other entity that has authorized a company or an originator to initiate a credit or debit entry to a transaction account held at an RDFI. (Correct)
 - A financial institution that initiates a wire transfer or automated clearing house (ACH) payment. (Incorrect)
- Reversal:
 - The disbursement of funds to consumer accounts. (Incorrect)
 - Any ACH entries or files sent within required deadlines to 'correct' or reverse previously originated entries or files. (Correct)
- Transaction:
 - A payment transaction authorized by the customer, originated by the biller that pulls funds from the customer's account. (Incorrect)

➤ Activities affecting a deposit account, carried out at the request of the account owner. (Correct)

○ Unauthorized:

➤ An ACH item that was never originally authorized, clears for more than was originally authorized, or settles earlier than was previously authorized. (Correct)

➤ An agreement by a receiver to allow for the posting of debit or credit items to an account. (Incorrect)

The types of questions that students are asked to answer toward the end of the quiz

are:

1. An agreement by a receiver to allow for the posting of debit or credit items to their account.
 - a) Authorization
 - b) Affidavit
 - c) Debit
 - d) Payment

2. An entry to the record of an account to represent the transfer or placement of funds into the account.
 - a) Transaction
 - b) Credit
 - c) Debit
 - d) Direct deposit

These questions contain basic terminology and principles of electronic payment systems. Students are expected to answer these questions based on their knowledge and comprehension of the concepts.

2.2.1.2. Additional Material

Additional material is included in the word document and provided as a link in Lab I.

- Size of the electronic transfer

Electronic payment systems constitute frequent practice of sending various amounts of money from one end of the transaction table to the other. These electronic payments can be classified under different categories depending on the direction of the digital money: Business-to-Business transactions (B2B), which take place when two businesses are involved in an exchange of goods and services, Consumer-to-Consumer transactions (CSC), when two consumers wish to transfer funds to each other for the sake of reaching a certain financial target so as to be able to buy a certain commodity, Consumer-to-Business transactions (C2B), which occurs during the normal process of a consumer buying and paying for online goods, and the Business-to-Consumer transactions (B2C), in case payments have to be made to a particular consumer for performing online activities. Each of these has a special characteristic that differentiates it from the rest depending on the nature of the transaction, the direction of the funds and the value of the order (Lawerence, 2000).

According to Danial (2002), the size of electronic payments can be classified as follows:

- a) Micropayments, which are payments less than \$10 that are primarily conducted between Consumer-to-Consumer transactions and Business-to-Consumer transactions.
- b) Consumer payments that are between the values of \$10 and \$500 conducted mainly in Consumer-to-Business transactions.
- c) Business payments that are greater than \$500 and are conducted in the Business-to-Business transactions.

Accordingly, Business-to-Business transactions account for about 95 percent of all e-commerce transactions that are carried out online, while the others account for the remainder (Turban et al., 2004). Additionally, peer-to-peer transactions which relate to all the transactions that are carried between consumers are relatively small in size because of the stiffness in their usability. Further, according to Cavarretta and de Silva (1995), there are three classes that can be used to classify online payment systems in relation to their size:

- a) Tiny value: These are transactions whose net value falls below \$1.
- b) Medium value: These are transactions whose net value falls between \$1 and \$1000.
- c) Large value: These are transactions whose net value is above \$1000.

Systems that are able to support transactions of a tiny value have to substitute the convenience of carrying out this transaction (note that this is an extremely cheap transaction) and the cost of offering the customer and the transacted funds the necessary security as well as the durability of the transaction (Westland, 2002). On the other hand, transactions involving large values require highly sophisticated, and often expensive,

security protocols so as to ensure the safety of the consumer and the transacting organization. Finally, almost all transactions can be carried out on medium-sized transaction ranges (Lawrence, 2000).

- o Conventional vs. Electronic Payment System

In order to understand underlying concepts of the electronic payment process, it is crucial to grasp the process of the conventional/traditional payment systems in relation to the new online payment systems. The traditional system and settlement involves a physical buyer-seller transfer of cash or any other acceptable form of payment (such as the use of credit cards or checks) in exchange for the provision of services or a physical product. The actual payment of the procured materials and services takes place in the physical (or in some instances, virtual) financial processing networks of both the seller and the buyer (Sharma and Diwan, 2000). In this case, a cash payment requires that the buyer of the products withdraws some amount of money from his or her account or a transfer of this amount to the account of the seller, and the seller deposits this amount into his or her own accounts (Westland, 2002). Additionally, in the case of non-cash payments, settlements are carried out in the form of adjustments, such as crediting and debiting the accounts of the buyer and seller respectively, on the bank accounts of the two parties via the information that is conveyed through the physical means of payment provided, such as checks and credit cards.

The electronic payment system is a subset of the e-commerce transactions that are used as forms of payment for online transactions. Generally, these are forms of payment that are acceptable for buying and selling online goods and services. The electronic payment of goods and services generally involves all the online transactions that take place

between the buyer and the seller, creating a link between these two and their respective banking schemes. Digital funds are moved from the account of the buyer into that of the consumer of the goods, without the need for face-to-face communication. Generally, there is no need to exchange the account details between the buyer and seller as each one feeds it on their own terminal at each end. Increasingly, there is a need for authentication and encryption technology in order to ensure the security of these online transactions (Westland, 2002). This is in order to decrease the perception, or possibility, of a non-authorized person accessing either accounts and intercepting the contents of a particular transaction.

The next section explains how Lab II has been developed using levels of Bloom's taxonomy.

2.3. Lab II: Comparison Between Amazon And PayPal Payment Systems

2.3.1. Knowledge

Students in this level learn the factors that are responsible for choosing a payment system and why each factor is important to consider. The next section gives a brief description of the factors that are important to consider.

The factors important to consider when choosing a payment system are:

- a) User's Privacy
- b) Efficiency
- c) Trust
- d) Seller's Acceptability
- e) Convertibility
- f) Accessibility

g) Usability

h) Interoperability

2.3.1.1. Why Is Each Factor Important To Consider?

o User's privacy

Though PSPs do not require the exchange of information, such as banking and credit card data, between the consumer and the seller, this information is necessary for the exchange of funds between the two parties. This information is stored by the online shopping company in order to carry out the transfer of funds from the consumer to the seller's account. In this respect, privacy is necessary. The privacy of this information is thus of paramount importance for the users of the PSP website (Turban et al., 2004). Different online legal jurisdictions have different legal regulations pertaining to the privacy of consumer information, with different levels of enforcement. As many customers would like to avoid getting spam messages in their e-mails or telemarketing, online merchants and PSPs guarantee that the information gathered by them in the event of transferring funds in a particular transaction will be kept confidential, promising not to use it or giving the consumer the option to opt out of these forms of contact. The worst case scenario is when the personal details of the consumer are not securely stored within the system's servers, allowing hackers and crackers to gain access to it and either withdraw money from the user's account or carry out purchase transactions on behalf of the user without their consent (Lancaster, 2003).

o Efficiency

Upon the creation of a PSP account, the use of the account should be efficient enough to warrant the risk and cost being incurred as well as maximize the rate of

production and sale of the online goods and services. Second, the users of an online Payment Service Provider are interested in the complexity of the system and how easy it is to use. The simpler and more direct the web-based system is, the more efficient it will be in catering to the needs of the consumer (Laudon *et al.*, 2003).

Though the definition of this online payment system efficiency is not direct, and is relative to a particular application, a system is said to be more efficient than another if it provides more resources and services than the other, without necessarily being more complicated to use or being more expensive. In terms of being economically efficient, an online system is considered efficient if the system's prices reflect the amount of information it contains as well as the services that it provides, in relation to the needs of the consumer (Brainov, 1999).

- Trust

The concept of trust in an electronic payment system is one that has increasingly received skeptics. More specifically, the greatest challenge that online payment systems face is the capability to develop systems that will lead online companies and other merchants, including general consumers, to trust them without having had any prior experience with the PSP. In order to design systems that can be trusted, it is important that the company designing these systems determine the available trust mechanisms in their intended market, and any areas of weakness that could be exploited by skeptics, hackers and crackers. Thus, in the context of the goods and products being sold, the protection of the identity of the user, the safeguarding of the reputation of the online company and the capability of the company to deliver on the sales and marketing promises that have been agreed upon before the contract is signed (whether physically or online) is important.

- Seller's acceptability

For any online system offering the services of online payments, it is important to carry out verification exercises in order to clearly determine if the person performing the transaction is actually allowed to do so. For some systems, it is necessary to send physical evidence of identity for the account to be validated (Cavarretta and de Silva, 1995).

Validation keys and codes are normally sent to the subscriber's email or post office address, requiring the code to be reentered before the website can be accessed. This form of verification increases the security of the customer's information, further increasing their trust and acceptance of the system.

- Convertibility of funds

The convertibility of currency is important in an online system. This convertibility refers to the freedom that the users have with respect to making local and international payments. In other words, it is necessary for a person in one part of the world to make purchases for goods and services without a restriction on the location. According to Boom, the users of the system should be able to make use of the various components that the system has in order to solve any convertibility issues that might be present. Money is generally convertible from one form to the other. In case the system does not allow for convertibility to one particular form of currency, knowledge learned from past experience can assist the users in determining the best currency to convert to in order to easily get a currency that will best suit their needs.

- Accessibility for new users

The testing of a particular website is a service that is performed by web developers in order to ensure that new visitors can move around and maneuver within the system.

Even when users are not tech-savvy, they should be able to use the system without much difficulty. Users of the system should be able to easily customize and edit their profiles without much difficulty, as well as change the input and output features from the peripheral devices connected to the terminal they are working on. Typical accessibility functionalities can be classified as:

- a) Visual impairment: These include disabilities such as blindness, or low restricted vision, making it hard for the user to accurately follow the transaction.
- b) Motor skills: These involve the user's ability to correctly and with ease make use of the mouse, keyboard and other peripheral devices while visiting the web site.
- c) Hearing impairment: This can be due to the reduction in the capability of a person to accurately hear the instructions of the system.

Help facilities are necessary for users who are new to a website, giving them a chance to learn new things that they did not previously know.

- o Interaction design/Usability

This relates to the design of the user interface and other modules of the website in order to ensure their usability in relation to the needs of the customer. The technical innovation of the user interface of the website dictates the move made by the technical developers of the system to make it more usable and friendlier for new beginners to learn. The usability of this system depends on the ability of the developers to embed ambient social complexities in a manner that is more suitable to the ordinary user. Technology alone is not sufficient enough to win the acceptance of the intended users together with its purported marketability. The experience the users get out of their use of the system is the primary ingredient that determines its acceptance and feasibility in the market. While most

system developers focus on the authentic use and receipt of data in the system, usability specialists are able to focus on the applicability of the user interface in the market, making sure that it creates the best visual impression and achieves the best desired results.

- Interoperability of the system in relation to other payment systems

Optimization of an online system requires the use of different vendors in relation to the parent organization. This relates to the ability of the system to provide the services necessary to the consumer as well as to accept input data from other systems that are not within the same platform, allowing the exchange of files and information and enabling them to operate effectively together. With the current economic downturn, there is the possibility of growth and innovation as it presents consumers with the capability to use different systems to access payments and receive funds, online. A single vendor or online merchants ties together all the networks available, introducing them to their pace of innovation and the cost of using their particular infrastructure (Turban et al., 2004). A snapshot of the application is provided below in Figure 4.

Students at the end of the lab are asked questions, such as:

1. Why is the factor “User’s Privacy” important to consider?
2. What are the typical accessibility functionalities?

Students are expected to answer these questions based on what they memorize after going through the material. The next section illustrates the difference between Amazon and PayPal payment systems with respect to each factor.

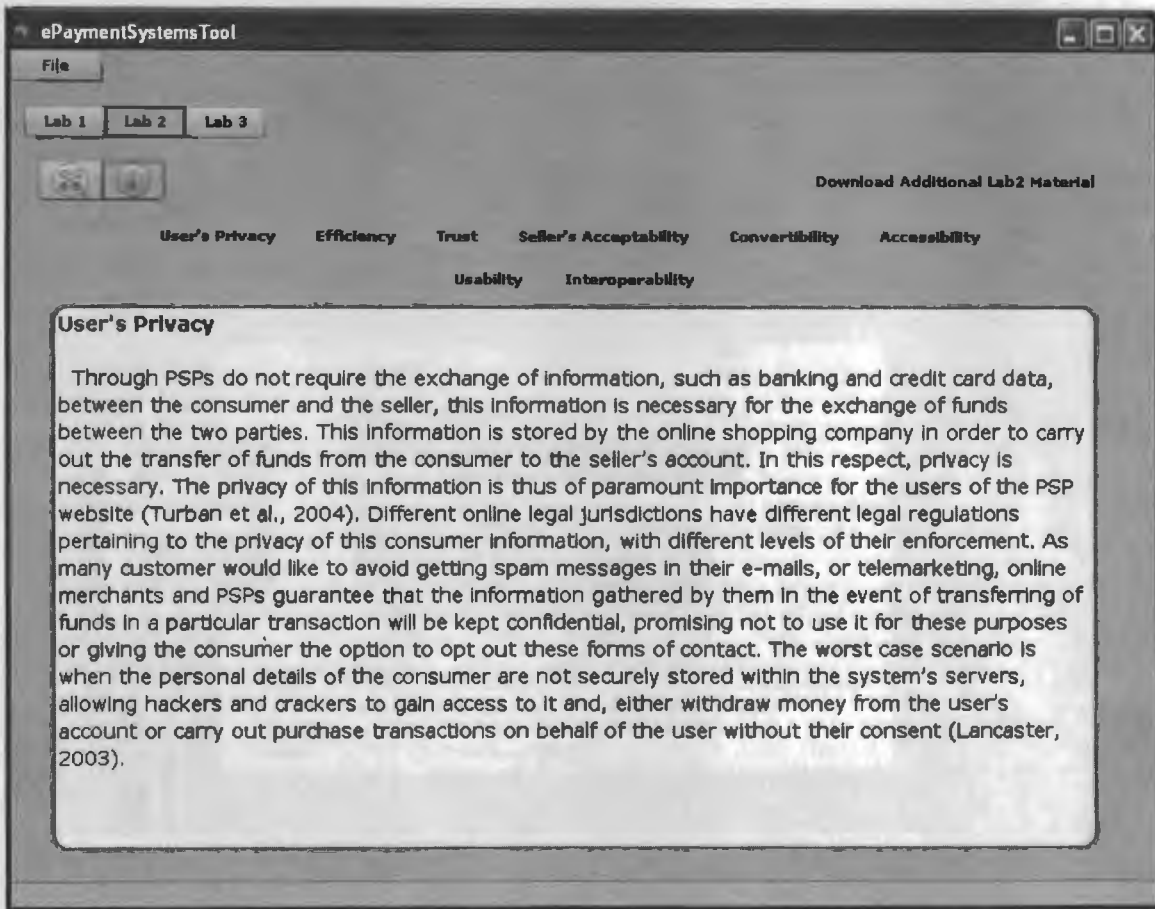


Figure 4. Lab II application with factors explained.

2.3.2. Comprehension

Students in this level are exposed to two payment systems: Amazon and PayPal. This material differentiates between the Amazon and PayPal payment systems with respect to the factors that were explained above so the students can better understand. This will help them analyze the payment system that will best fit with their business plan. The ratings that are allotted to each of the payment systems with respect to every factor are based on the research done on the systems. The material is provided in the form of a PowerPoint presentation. A snapshot of the application is provided below in Figure 5.

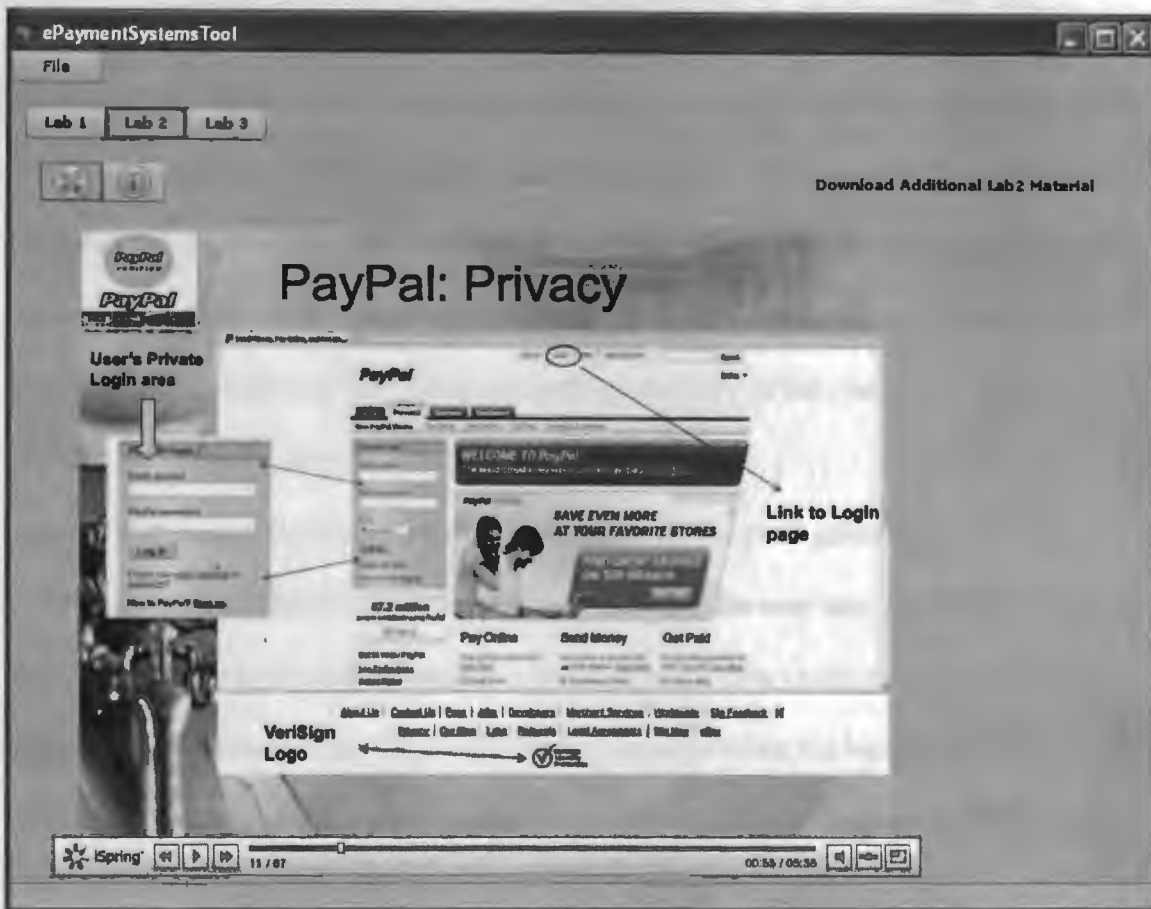


Figure 5. Lab II application with presentation.

2.3.2.1. Comparison Between PayPal And Amazon.

o User's Privacy

PayPal is touted as the most secure network that offers online transactions and payments. It guarantees consumers that they can carry out online shopping without having to share their personal details with the intended vendors using the latest anti-fraud technology. As a means of preventing fraud, the company has put in place authentication procedures that require the user to first sign in to the system, with the stored password and username, before any transactions can be completed. An email verification is then sent to the email address of the user saying that receipt of a transaction that had not been

authorized can be easily detected as a case of fraud on the account. The company also guarantees that all the information that is stored in its database servers is kept safely, away from hackers and crackers who might wish to use it to carry out unauthorized transactions or to defraud the user. The seal of VeriSign on the company's website is used to indicate the company's commitment to the guarantee of privacy, pledging to keep the personal banking, email, credit card and other personal information of the customers safe from prying eyes (Brainov, 1999).

When a user signs up for a new account, he or she must go through a unique verification process that involves the company debiting the new user's credit card with a small amount of money which, when it is credited to the new credit card statement, is tagged with a distinctive four digit code that is supposed to be fed back to the verification website. However, there have been claims by numerous users of the site that these codes sometimes never appear on the statements, even after the amounts have been debited (Truman et al., 2003). Additionally, users sometimes have to wait for several months before they receive their credit cards or the statements. For a system that is supposed to be super-fast, as it runs on the Internet, where users are expectant of carrying out online transactions, the convenience of this verification system is lacking. A related problem is that in order to carry out transactions using the online system, the buyers and potential consumers of a particular product have to be registered as system account holders before they can purchase anything online. This is especially so for eBay buyers who wish to purchase something from the online merchant. However, not many people wish to go through the process of creating a new account. This is a significant problem as the more

difficult the system providers make it for the consumers to buy items online, the fewer sales they will make.

Amazon also requires users to sign in when visiting the website before any transactions can be made. Since the website supports the purchase of goods and services from other affiliate websites and online merchants, a single primary login is sufficient for the users to carry out purchases without having to repeat the process. Privacy and security, however, is still maintained by ensuring that these transactions are carried out within a limited time after login, referred to as the session time, after which the process has to be completed again (Brainov, 1999). Even when the transactions are to be completed from outside the parent website, verification, in the form of date of birth and answering a personal question, is necessary before the user is allowed to make payments. Just like PayPal, an email confirming the completion of a transaction is sent to the email address of the user after every transaction.

Security and privacy of the user's information are the greatest concerns of an online payment system. If the system cannot guarantee that they can securely provide the users with the services agreed upon without the users having to lose money, then the system is not secure enough. The fact that an internal review of PayPal's security protocols show that the users registered to the online system still consider the company to be vulnerable to fraud or the release of their personal information is a huge blow to its financial surveillance and monitoring technology. On the other hand, Amazon has so far had a better reputation of maintaining the security and privacy of the users' data as a result of the implementation of efficient security procedures. For these reasons, a comparison of the two payment systems gives PayPal a score of 4 and Amazon a score of 7 on a scale of 1 to 10.

- Efficiency

The efficiency of an online payment system is an important functionality of the financial market as well as the economy. Under normal circumstances, the operating costs of the system are delegated to the online financial institution. Thus, the system has to make sure that these costs are kept to the minimum, accounting for the quality and worth of the services that are provided to the online users and the operative safety procedures as a means of promoting the most favorable allocation of economic resources. Efficiency of the application is guaranteed by repeatedly caching the information the users input to the system, thus ensuring that the users do not have to input it every time and that they do not have to wait as the system retrieves data from the servers (Turban et al., 2004).

As a measure of its efficiency for use, *PayPal*, using the Mass Pay API, allows the users of the system to send multiple payments at the same time, significantly reducing the time it takes to make payments to multiple employees. By first listing the email addresses of the intended recipients together with the amounts that each of the recipients is liable to get, the system makes it easier for the users to perform multiple transactions at the same time. A unique identifier is normally attached for each of the recipients, allowing for the tracking of the payments as a means of reconciliation of all the payments made by the system. A sample code of this system functionality, allowing a total of 250 multiple payments, is shown below in Figure 6.

Upon completion of the creation and implementation of an online system as well as the user's creation and activation of an account, it should be efficient enough to warrant the risks that the user takes while carrying out the transactions on the said account.


```

    public string EmailSubject="";
    public string ReferenceID="";
    public double Amount=0;
}

//a class which holds the MassPayees
public class MassPayTable:ArrayList{

    public void AddPayee(MassPayee payee){
        //the API will only allow 250 payees
        if(Payees.Count=250){
            throw new Exception("A maximum of 250 payees are allowed");
        }else{
            Payees.Add(payee);
        }
    }
    public void ClearPayees(){
        Payees.Clear();
    }
    public int Count{
        get{return Payees.Count;}
    }
}

```

```

// Build the Security Header
this.SetHeaderCredentials(service);

// Create the MassPay Request
MassPayRequestType masspayRequest = new MassPayRequestType();
//allocate the array for the ItemTypes
masspayRequest.MassPayRequestItemDetails = new
    MassPayRequestItemType[PayeeTable.Count];

// create the Amount
BasicAmountType amount;

// Create the MassPay Request Item
MassPayRequestItemType masspayRequestItem;

//our indexer
int counter=0;

//loop through the MassPayee List and add the
//information to the PayPal API objects.
for(int i=0;i<PayeeTable.Count;i++){
    masspayRequestItem= new MassPayRequestItemType();
    amount= new BasicAmountType();
    amount.currencyID = CurrencyCodeType.USD;
    MassPayee payee=(MassPayee)PayeeTable[i];
}

```

```

        amount.Value = payee.Amount.ToString();
        masspayRequestItem.Amount = amount;
        masspayRequestItem.ReceiverEmail = payee.Email;
        masspayRequestItem.UniqueID = payee.ReferenceID;
        masspayRequestItem.Note = payee.Note;
        masspayRequest.EmailSubject = payee.EmailSubject;

        // add the previously created MassPayRequestItemType obje
        to this array
        masspayRequest.MassPayRequestItemDetails[counter] =
            masspayRequestItem;

        counter++;
    }

    MassPayReq request = new MassPayReq();
    request.MassPayRequest = masspayRequest;

    MassPayResponseType response = service.MassPay(request);
    string sReturn=CheckErrors(response);
    if(sReturn!=""){
        sReturn=response.Ack;
    }
    return sReturn;
}

```

Figure 6. Code allowing 250 multiple payments.

According to the company, the Standard Rate for sending or receiving compensation for goods and services that are sold or bought online is 2.9 percent (PayPal, 2010). If the user of the system wishes to transact more than \$3,000 per month, then the user is entitled to apply for PayPal's Merchant Rate standards, lowering the fees levied and increasing the volume of sales for the website. On a scale of one to ten, this user's efficiency and its capability to make several transactions at the same time gives PayPal a score of 6.

In the case of *Amazon*, fees are accessible for every transaction that the user makes, varying with respect to the size of the transaction and the destination of the receiver. These are based on a percentage scheme, calculated as a measure of the amount together with the

transaction fee per transaction. In this regard, the following transactions can be conducted in the Amazon website, indicating its efficiency in meeting the requirements of the user:

- a) Tiny value: These are transactions whose net value falls below \$10. Five percent + \$0.05 for all transactions. Fees are assessed per transaction varying on the basis of the amount to be transacted.
- b) Medium value: These are transactions whose net value falls between \$1 and \$1,000. The total charges for these kinds of transactions include 2.9 percent + \$0.30. Amazon also offers a volume discount on the above-charged amounts at the rate of:
 - i. 2.5 percent + \$0.30 for all transactions for monthly payment volume from \$3k-\$10k
 - ii. 2.2 percent + \$0.30 for all transactions for monthly payment volume from \$10k - \$100k
 - iii. 1.9 percent + \$0.30 for all transactions for monthly payment volume over \$100k
- c) Large value: These are transactions whose net value is above \$1,000.

The Amazon system that can support transactions of a tiny value have to substitute the convenience of carrying out this transaction (notice that this is an extremely cheap transaction) and the cost of offering the customer and the transacted funds the necessary security as well as the durability of the transaction (Westland, 2002). On the other hand, transactions involving large values require highly sophisticated, and often expensive, security protocols so as to ensure the safety of the consumer and the transacting organization. Finally, almost all transactions can be carried out on medium sized

transaction ranges (Lawrence, 2000). Though large scale transactions amass most of the financial revenue that the company makes, small and medium scale transactions are carried out in very large quantities and its capability to take care of this market gives Amazon a score of 8 on the scale of one to ten in terms of system efficiency in a competitive market.

- Trust

The majority of the trust issues with *PayPal* as a payment scheme are based on the history of the transactions that have been carried out through the system together with the consumer reactions towards their implementation and use. Most specifically, the growing challenge that exists between the first trade problem in the use of electronic devices in an online shopping situation leading this international company to build trust among users who have not had any previous experience with them. In order to design for this trust, PayPal has used the functionalities of context, identity, as well as reputation in the enforcement of its stake and rank in the computing world. However, this trust is also conditioned as a measure of the socio-cultural acceptance that the traditional cultures influence. This need to gain the trust of the regular Internet users is developed by PayPal's time asymmetry, shortage of power or the liability to conclude the most perfect contracts. This asymmetry in terms of time is reported as a trust catalyst for the cooperation of human beings who wish to embrace the use of e-commerce with regards to their perception of sufficient security.

The technology used by *Amazon* has been dependent on the infrastructure with no malfunctioning, as this would potentially cause expensive outages for the online merchant store. The company has invested a lot of money into modern day cloud computing technologies as a means to provide flexibility in the management of their online

infrastructure. This has led to the creation of an online cloud computing system, the Amazon EC2, considerably increasing the trust that the users have in the system. However, this technology has recently undergone serious criticism. On July 20, 2009, the home page of the system was unavailable for customers for a period of about 15 minutes, causing panic and mistrust in users. A year later, the system experienced even longer outages, giving a clear demonstration of the growing pains of this new technology. While on their own these events do not necessarily give an implication of the growth of the mistrust of the system, a disruption of the system for longer periods of time would have far greater consequences in reducing the competitive capability of the company in the online market and damaging its credibility as a global provider of an online payment and purchasing system.

In order to guarantee trust that the system will deliver the required functionality within the required time, each and every dependency of the system that is built on the basis of the operational platform is required to deliver the desired functionality with tighter boundaries. Clients of Amazon are supposed to sign a Service Level Agreement (SLA), a legal and formally negotiated performance contract between the consumer and the service provider, primarily involving the user's expectations of the system as well as the levels of efficiency that are expected. One of the provisions of the Amazon SLA is a service that guarantees that the system will provide an efficiency response rate of about 300ms for about 99.9 percent of its services, during peak and off-peak client loads.

As a common approach of the online industry, the performance of the SLA is done in a manner to describe the average, median and variance of building a system that will satisfy the customer's experience of using the system. As an example of the extent of use

of this system, if extensive personalization of the system is carried out, those with longer histories will require a greater deal of processing power as compared to those with shorter histories, impacting on the end-user performance of the distribution. With a 99.9 percentile performance, Amazon has made cost benefitting analysis of the demonstration of the significance of the cost for better performance of the system so as to increase the level of trust that the users have (Turban et al., 2004).

Though PayPal has been criticized for losing account members' funds during the process of carrying out a transaction, these claims cannot be validated with reasonable evidence. Additionally, the payment system guarantees to refund users' funds that are lost during the process of carrying out a transaction (Truman et al., 2003). Amazon, on the other hand, has had too many episodes of malfunctioning and, being a new payment system, this has not helped in building the trust of users. Because of these reasons, the payment systems can be graded as 6 and 4 on the scale of one to ten for PayPal and Amazon, respectively.

- Seller's Acceptability of the system

Reliability and seller's acceptability of the system is a primary challenge for *Amazon*. As one of the largest e-commerce providers and online merchants in the world, even the slightest outages have a significant impact on the acceptability ratio of the users as it has serious financial consequences on their business. The Amazon platform, while providing various online payment service schemes for many online merchant websites, has been implemented on the basis of an infrastructure comprising of tens of thousands of servers that have been networked together and which are located in various datacenters all over the world. At this international scale, the malfunctioning of small as well as large

components in a continuous and persistent manner has to be managed in order to increase the acceptability, reliability and scalability of the system.

The use and implementation of the Dynamo software system, highly available storage application software, is a key application that has been used by Amazon as a core service provider to avail the “always-on” capability and increase the user’s accessibility of the website (Truman et al., 2003). In order to increase this accessibility and availability, Amazon directors have said that the use of Dynamo, though it sacrifices the consistency of database access, it limits the number of system failures. Making use of its extensive, object versioning and application-aided inconsistency resolution capabilities, the system provides a fresh and innovative software interface for users that guarantee online accessibility whenever they desire it. As an online payment system, the acceptability of Amazon can be gauged a 5 on the scale of one to ten since even though they have guaranteed the “always on” functionality, the Dynamo software currently installed is prone to bugs and unforeseeable mishaps for which the company has no other backups.

PayPal began as a browser-based system and as such, did not require that the proposed users install any additional software programs in order to be able to use the system. Customers are simply asked to register an account with PayPal through which, after going through verification and a deposit of money, can be used to carry out online transactions such as buying and paying for goods and services. Like many other online payment systems, the registration of an account is done through the users filling out forms and giving their banking details. However, the company guarantees not to reveal any of the customer’s personal information to other online users, even when a transaction involves the two users. In addition, PayPal users can choose to either register into a merchant’s account

requiring authentication or an unauthenticated account. The user does not have to provide any of their personal information, though the transactions are limited to \$1,000. This has greatly increased the user's acceptability, thus increasing the seller's acceptability of the system, giving it an 8 on the scale of one to ten, as most users would rather not provide any information in order to operate online.

- o Convertibility of funds in the system

Money should be convertible from the currency in which the consumer/sender pays it in the currency in which the seller/receiver needs it (Turban et al., 2004). The online payment system should be able to provide this functionality, or provide the currency in a format in which the receiver can manually convert it at their local bureau of exchange. In *Amazon*, users can pay or receive payments for a particular order in terms of US dollars or any other type of currency that is identified with the Amazon currency converter. If the currency users want is not available, then they have to select a different currency that best suits their needs. In some cases, users might not be able to figure out the right currency in which they should get their payments, as their local currency might not be available on the currency converter. If this happens, then the users can make their payments in terms of US dollars and click the "Switch Currency" button in order to convert their currency to a more acceptable one before submitting the order (Truman et al., 2003). Currencies supported by the system include the dollar, the kroner, the yen and the rand.

In order to qualify to use the Amazon currency converter, the user of the system must:

- a) Use a valid Visa or MasterCard denominated in a currency that has been accepted by the company's website.

- b) The payment that is to be made has to include any promotional offers or discounts that are currently being offered by the website, without the inclusion of gifts and certificates.
- c) The items that are to be purchased must be in stock

PayPal, on the other hand, offers more flexibility in terms of the convertibility of currency from one format to the other and from different geographical locations. PayPal, through the use of its Multiple Currencies functionality, aims to facilitate payments among the varied base of its international members. PayPal offers conversion rates that are competitive in comparison with other online payment systems. According to the company, PayPal offers the most readily available currency conversion functionalities and rates on the basis of the “interbank exchange rates” (Truman et al., 2003). This is a currency conversion rate that has been established among a collection of about 1,000 global banks, which is then made available for the consumer through the retail and purchasing channels. The consumer is welcome to use these currency conversion rates as a reference, but should not make any claims on the currency conversion rates that are available in other banks that have not been sampled by the interbank. Before the currency is converted, the consumer should check the current currency conversion rate displayed on the company’s website. Additionally, the company charges a 2.5 percent conversion levy for all withdrawals that are made from the account into an account that holds currency in a form that is not compliant with the primary currency. This is termed a conversion fee and is subject to the prevailing foreign exchange rates for the currency that is to be converted. For people carrying out small to medium sized transactions, this levy is a definite setback as it reduces

the amount of profit gathered as well as increases the price of purchasing an item, as these charges have to be incurred by the sender/buyer.

The currency converter is easily accessible on the company's website in case the user wishes to:

- a) Send a particular payment in a currency that is non-local to the user
- b) Accept and convert any money received in a currency that is saved as the primary currency of the user
- c) Withdraw money from the PayPal account into an account which only receives non-local currency
- d) Move money between currency balances.

Additionally, users have the capability of reviewing the history of the online currency conversion history in order to detect any cases of fraud or miscalculations. On a scale of one to ten, PayPal's capability to users with currency convertibility can be placed at 7 while that of Amazon can be placed at 4.

o Accessibility for new users

For most eBay power sellers, it is convenient for online merchants to use *PayPal* as they do not have to run to the bank every time they get a payment or wait for long periods of time before the checks that are used to pay them clear. Though this is not clearly indicated in the buyer/seller agreement that is signed upon account creation and activation, if a single complaint is filed against a particular customer or seller, then their account is automatically frozen, a term that is used to imply a disabled account. This accessibility limit for the account is sustained until the said user:

- a) Submits to a credit verification

- b) Be available at a particular phone number in case a verification is carried out by phone
- c) Submit a fax of the receipts from an inventory as a means of proof of the items that are being sold
- d) Fax a copy of an identity card.

This can sometimes take longer than a week, after which the frozen account is again enabled.

Just like any other online payment system, PayPal has a central computer with at least one remote terminal and a means for increasing the accessibility of the users to the functionalities of the system. This accessibility is increased by the issuing of a verification and identification system that ensures that only the authorized members of the system are allowed access to the transaction terminal. The accessibility of the account data is kept only at the discretion of the data card holder, which is then scrambled and compared to alphanumerically encrypted data at the terminal. This alphanumeric data is then converted into a digital signal that can be compared to the scrambled data of the customer's account data. This verification of the users of the system increases the security of the users of the PayPal system as well as increases the levels of their accessibility to its various functionalities and resources. Only the verified members of the system have access to establishing their identity with the company.

However, PayPal has received criticism about the extent of its accessibility, especially in terms of whether it is possible to send or receive money with respect to the geographic location of the specific user. Generally, PayPal allows users to send money/payments from every corner of the world (Truman et al., 2003). This means that

users can make purchases from every location, as long as they have some money in their PayPal account or they can reload their account from their bank Visa Cards. However, there are serious limitations in terms of receiving money through the PayPal account, especially if the users need to directly deposit the money into their local bank accounts. Whereas other online payment schemes allow users to deposit money into their bank accounts by submitting information about their banking details, PayPal sometimes does not allow users to do so, limiting the geographical location of users/sellers who would wish to set up their accounts in these locations. With regards to the above reasons, it is clear that PayPal is not an easily accessible payment system for online users. On a scale of one to ten, the company can be graded as having a score of 3.

On the other hand, *Amazon* gives access to a broad range of users of the site in regards to its enhancement of access to the finances of the buyer to the seller as well as the development of the payment system in line with its public policy objectives. The public policy of the organization demands that the company provides an economic environment that supports the inclusion of a micro financial payment system (Wright, 2002). The use of advanced technologies in its operation, such as the incorporation of the electronically linked checking and cash top-up utility in the retail payments and purchases, provides users with the capability of accessing the website's infrastructure, even when they are not tech-savvy themselves. Accessibility of the company is highly encouraged by the users being able to carry out online transactions with each other, as well as being able to easily contact the site's administrators. On a scale of one to ten, the company receives a score of 8.

- Interaction design/Usability

In relation to the correlation that exists between the design of the users' interface and other modules and components within the system, the website of the online PSP should be friendly for the users, making it usable in relation to the requirements of the consumer. According to critics and company management, *PayPal* is touted as being the most user-friendly online payment system, where all the contents and components of the system can be accessed by clicking on the numerous links that are available. The website is not complicated and everything is grouped in accordance to the particular needs of the consumer (Turban et al., 2004). With the growing cases of most consumers "getting lost" within most websites, as they cannot get what they are looking for or become overwhelmed by the immense amount of information, queries and buttons that are normally available, PayPal has achieved in ensuring the creation of a user interface where the consumers can feel at ease while carrying out their transactions. Even those who are not tech-savvy can easily carry out transactions as it has vast information in their help and Frequently Asked Questions file for new online shoppers and sellers (Wright, 2002).

Though a relatively easy-to-use system, *Amazon's* online payment website is not equally user-friendly since it contains too much information on the various departments of making purchases. The complexity of the system is brought about because the system acts as an online payment system for Amazon, an affiliate of the payment system as well as other online merchant stores that wish to make payments through the Amazon account. In this light, too much information is given to the first time users, who sometimes forget to "Sign in" or "Sign up" once they are bombarded with all the "cool stuff" the online shopping store has to offer. However, for more tech-savvy users who can maneuver out of

the shopping websites and into the online payment system, the user interface is much improved, allowing users to store information about themselves so they do not have to input it again. On a scale of one to ten, PayPal's interaction design and usability can be placed at 7 while that of Amazon can be placed at 5.

- Interoperability of the system in relation to other payment systems

The optimization of any online system requires that vendors be capable of communicating and transacting with other vendors and online agents. This is in relation to the capability of a particular system to provide the necessary communication and interoperability resources for the users of the system to send money to other online systems as well as to deposit money into their own local bank accounts. *PayPal* gives users the capability of sending money directly into their bank accounts after the completion of a particular transaction. It is also possible, through the PayPal account, to load money into the account by simply submitting the information about your local account as well as the amount that is to be loaded. Additionally, the online agent allows users to add or remove bank accounts from their profiles by simply clicking on the "Add Bank Account" button. The online payment system has also been linked with SWReg, a digital payment system for payments through PayPal.

The *Amazon* payment system represents a system of payment for purchases of goods and services procured from the Amazon website as well as those bought from other affiliate websites. According to a recent press release, the website has over 1,600 affiliate websites all over the world, most which carry out online transactions without users being aware that they have already moved out of the Amazon website. In this regard, the system is able to traverse to other websites that are affiliated with the company, without

necessarily losing the login information of the current user. This interoperability and access to other sites has given Amazon an elevated status in the online payment industry, increasing the number of affiliated websites wishing to advertise and post their products and websites as well as those wishing to shop online (Turban et al., 2004).

Additionally, the website allows users to deposit money into their local bank accounts as well as gives them the opportunity to load their Amazon account so as to carry out online shopping activities. This is done at the discretion of the consumers, allowing them to change the currency of their money into one that suits the needs of the transactions. On a scale of one to ten, PayPal's Interoperability in relation to other payment systems can be placed at 8 while that of Amazon can be placed at 6.

At the end of this lab, students are asked questions such as:

1. Compare Amazon and PayPal in terms of Efficiency.
2. With respect to Convertibility of the funds in the system, which one (Amazon or PayPal) scores the highest? Justify your answer.

Students are expected to answer these questions based on their comprehension of the concepts.

2.3.2.2. Additional Material

Additional material is included in the word document and provided as a link in Lab

II.

o Payment service providers

A Payment Service Provider (PSP) is an online company that offers merchants and other online traders the online services of receiving electronic payments through the assortment of the payment methods that are available today (Westland, 2002). These may

include payment means such as credit cards, real-time bank transfers, wire transfers, and other online banking methods. Typically, a PSP is capable of connecting through several bank profiles, cards and payment networks, connecting consumers and buyers who might not be banking in the same companies. In most cases, the PSP fully manages the technical connections between the consumer and the seller together with any relational data of the external network, making it easier for the merchants and consumers to transact as they are less concerned with the financial institutions of the other party and the establishment of these connections (Lawrence, 2000). By simply allowing the online businesses to deal with a single payment company (holding the necessary relational data of the bank details of both the sender and the receiver), a huge amount of time and resources is saved, creating a strong relationship between the various banks all over the world. Additionally, a full PSP offers such services such as risk management for credit cards and other bank-based transactions and reporting funds as well as multi-faceted money exchange functionalities.

There are numerous benefits by using the services provided by PSPs rather than trying to handle each transaction individually:

- a) Dealing with a PSP implies that for all the issues that are involved with relation to the sending and receiving of payment, the company has only one place of contact.
- b) Quick to set up: By employing the use of a PSP, a lot of time is saved that would have been spent by the company either having to speak to numerous banks independently, creating working relationships with these banks and/or negotiating for favorable deals with these banks, individually. Through the use

of PSPs, the relationships are created with the preexisting banks, conducting all the groundwork for the buyer and consumer (Sharma and Diwan, 2000).

- c) The payment system has previously been made and is ready for use. Creating a definite and secure payment system is normally not an easy thing. Under normal circumstances, it takes a little more time to carry out a profitable transaction than it does a face-to-face transaction, sometimes becoming expensive for both the seller and the buyer. Some problems and loopholes in the system may not be apparent until the website actually comes into use (Truman et al., 2003). By engaging the use of PSPs, the owners of the website are able to receive payments under systems that have already been tested and authenticated, increasing the confidence levels of both the customer and seller on the privacy and security of their transactions.

- o PayPal

PayPal is an online, e-commerce business giving online merchants and traders the chance to make and receive payments through the Internet. It serves as an online alternative to the traditional forms of physical paper payment methods (cash, checks and traditional money orders). A PayPal account is funded by uploading money from an electronic debit card or a credit card from an internationally recognized bank. On receiving a PayPal payment, the recipient can either request the PSP to provide a check of an equivalent amount, establish a deposit within the PayPal accounting system or request a bank transfer to a personal bank account.

As an example of an online intermediary payment service provider, PayPal performs the processing services for online vendors, auction sites together with other

online transactions charging a particular fee for these tasks. A certain nominal fee is charged in cases where the buyer receives money from a particular seller (Laudon et al., 2003). The amount of money charged depends on the type of currency being used, the payment option that is offered by the PSP as well as the option preferred by the sender and recipient of the funds, together with the particular location of the two parties carrying out the transaction.

According to the PSP's official website, PayPal is the "fastest, safest" way to get payments online, allowing users to send and receive payments from one part of the world to another without having to necessarily exchange financial information (PayPal, 2010). The PSP prides itself with having close to 90 million accounts in 190 trading places and 24 different currencies, becoming one of the top most preferred options for conducting e-commerce payments. The organization's open platform on payment, referred to as the PayPal X, allows the users of the service to create innovative web-based applications that can receive payments on several platforms and computing devices (Whitson, 2003).

As an online financial transaction broker, PayPal allows its customers to send and receive money through their respective email addresses. There is no exchange of credit or bank information. It thus acts as a middleman proprietor for the transaction, performing the task of transferring the money from one party to the other. With its strict privacy and security policies, the company has created rules and regulations that determine the business codes and ethics, earning itself a reputable position in the e-commerce industry. By putting in place multiple guarantee policies, the sender and the receiver of the transaction funds can trust the company with their bank or credit card details.

- Amazon Payment Gateway

Amazon is an American-based cosmopolitan electronic commerce company that has grown to become one of the largest online retailers, with an estimated sales income three times higher than all other online retailers in the country. Synonymous with the largest river in the world, Amazon is a company of immense size and influence in the retail industry, diversifying its list of goods sold from books, CDs and other literary materials to computer software, food, clothing and furniture. It has established independent websites in Europe, Asia, and Canada, providing better payment and shipping services for its products (Westland, 2002).

The Amazon Payment Gateway is a payment service that is offered to sellers and other associate members of Amazon, including public and personal websites and online transaction portals. For people selling on Amazon, the payment system is extremely straightforward and comfortable to use. The system has been well integrated into the user/seller account details, working with success in cases where the seller wishes Amazon to carry out, and charge for, the transportation and delivery of the goods (Laudon et al., 2003). In cases where the products being sold are affiliates of Amazon goods and services, commissions can also be included for every sale, making it easier for the seller to calculate their daily/monthly sales as well as to keep track of their sales and popularity rating. For businesses that are not directly affiliated with Amazon, but still wish to take advantage of the services and exposure available on the site, there is the Amazon Pay Now widget that brings the website of the seller closer to Amazon, allowing them to receive and make payments on their behalf (Westland, 2002). This is convenient as most people who visit the Internet on regular basis do not like to leave their information on many sites.

2.4. Lab III: Recommending A Payment System Using The Decision Support Tool

2.4.1. Knowledge

To drive the students toward the knowledge level, Lab I and Lab II are used in Lab III. The students are expected to recall the basic concepts from Lab I and why each factor is important to consider for the determination of the best payment system from Lab II. The next section explains the method used for designing the decision support tool.

2.4.2. Comprehension And Analysis

In this level, students are asked to think of a business plan choose from the eight factors, an appropriate level of importance that the students think should be significant when setting up their own business. Based on their learning and understanding in Lab I and Lab II, the students determine what factors would be important in the payment system for their business. Based on the different choices the students make, the decision support tool responds with a recommendation of a payment system (either Amazon or PayPal) that would best fit with their business needs.

The method that is used to develop the decision support tool is the Nonstructural Fuzzy Decision Support System (NSFDSS). The Nonstructural Fuzzy Decision Support System (NSFDSS) includes three steps. The first step involves the decomposition of the Multi-Attribute Decision Making problem. The second step involves pairwise comparative judgment of alternatives under different attributes. In the third step, the alternatives are ranked according to the aggregated scores (Tam et al., 2002).

Ratings given to Amazon and PayPal payment systems in Lab II are based on the research done analyzing the pros and cons of each payment system with respect to every factor. In the decomposition stage, the alternatives Amazon and PayPal are chosen to

compare between eight factors against four different levels of importance. Each factor comprises four choices (extremely important, highly important, important, least/not important) based on the degree of importance.

In the second stage, depending on the choice the student makes in choosing the level of importance for each factor, a value is stored for each alternative. For example, consider the factor “User’s Privacy,” and the student chooses “Extremely Important” as the level of importance. For the factor User’s Privacy, we have the ratings as 7 for Amazon and 4 for PayPal on the scale of one to ten from Lab II. Different weights are given to different levels of importance. The extremely important level carries a weight of 100 percent of the total rating, highly important carries a weight of 75 percent, important carries a weight of 50 percent and the least/no important carries a weight of 25 percent. Since the student chose extremely important for User’s Privacy, 100 percent of 7 for Amazon, i.e. 7 and 100 percent of 4 for PayPal, i.e. 4 are stored for the purpose of comparisons in the next levels. Likewise, for every choice that the student makes from each of the factors, respective weights for the alternatives are calculated.

In the third stage, when the student clicks on the “Analyze and Recommend” button for the recommendation, the values stored under each factor for every alternative are summed up. The total value against the total Amazon/PayPal weight (this is the sum of all the factor’s ratings for Amazon/PayPal) is calculated as a percentage. Based on these aggregated scores, if the derived percentage is greater than or equal to 75 percent, then the respective payment system is highly recommended. If the derived percentage ranges between 50 percent and 75 percent, then the respective payment system is recommended. If

the derived percentage falls below 50 percent, then the respective payment system is least/not recommended.

The tool has been developed using Adobe Flex to display the factors that are important to choose for the student's online business. The four levels of importance are displayed as radio buttons and the student should pick a radio button from each factor as shown in the snapshot. Based on their selection, the application recommends the payment system that would best suit their business. A snapshot of the application is provided below in Figure 7.

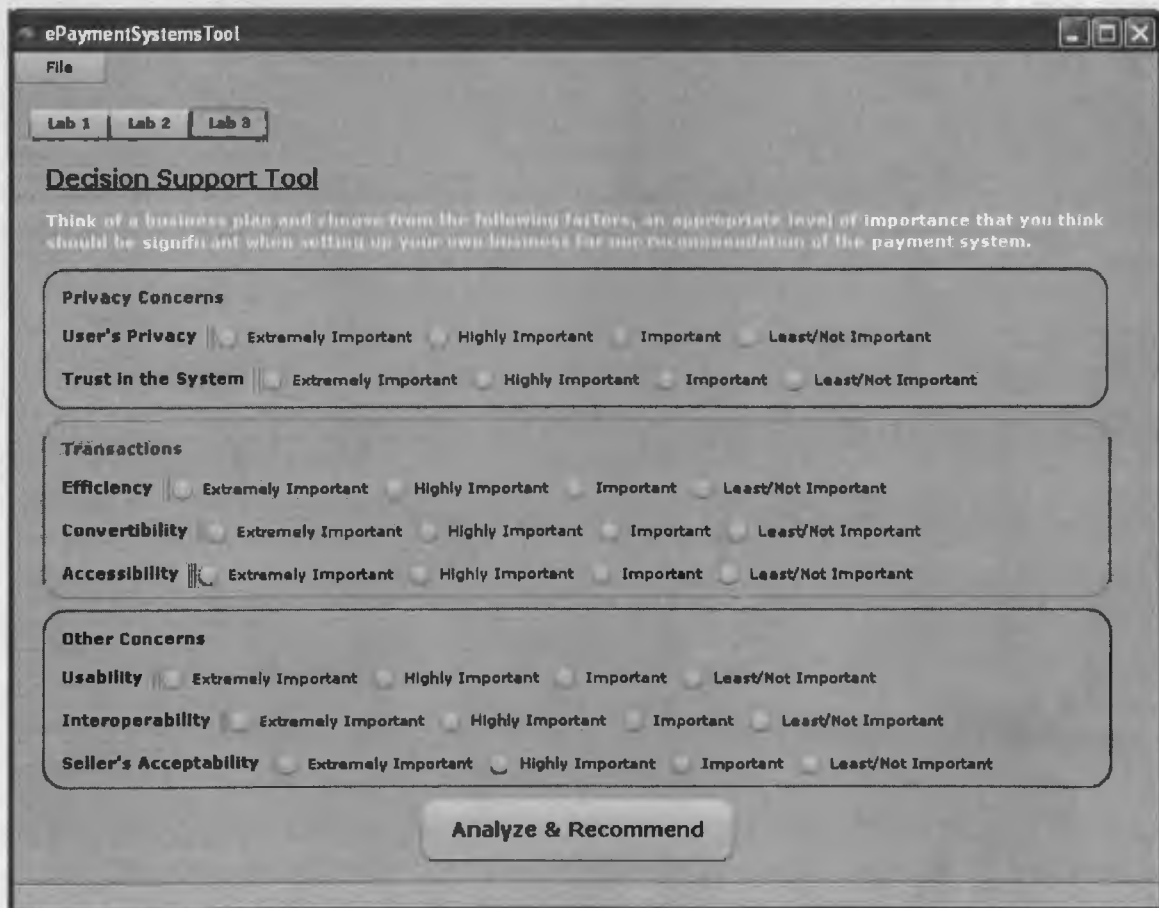


Figure 7. Lab III application.

At the end of the lab the students are asked to answer the following question:

1. Do you agree with the decision made by the system? Please explain why you agree or disagree.

This level helps the students think about their business plan and analyze the factors referred to in Lab II that would be important in their business. When students answer the above question they are determined to reach the comprehension and analysis levels of Bloom's taxonomy.

CHAPTER 3. ANALYSIS AND EVALUATION

3.1. Amazon Vs. PayPal

When it comes to the reception and sending of online payments, both Amazon and PayPal fit the bill. In addition, both are third party processors, shielding consumers from any form of harassment by the retailers and sellers as they do not release the information that is submitted. For most online shoppers, the idea of using one system is appealing as it allows them the capability of avoiding credit cards and the divulgence of bank account numbers and information to numerous sites for every purchase that is made online. However, as stated in the above chapters, there are differences in each of the systems, depending on the particular needs of the users, which inherently make one system better as compared to the other. From their definitions, it is clear that these differences exist in the levels of services and security they provide to their users as well as the levels of their online clientele:

- **Amazon** is the brainchild of the giant online merchant, Amazon.com Company, and allows the users to directly make purchases from the website and other affiliate websites right from the comfort of their terminals. Online businesses are allowed to use Amazon's payment system to process their own credit cards at very minimal costs, giving them the chance to protect the information that is provided by their consumers (Wright, 2002).
- **PayPal**, owned by eBay, is a widely accepted online payment, third party provider, offering a wide range of merchant services in addition to the facilitation of the stores online payment processes (Wright, 2002).

The following are additional factors that need to be considered when choosing between the two payment systems.

3.1.1. How Consumers Make Money

In the case of Amazon, customers can only use their credit cards to make payments for goods bought online. However, it is possible for the consumers to store information about their online details on the company's website in order to avoid having to enter it every time they log in. In this regards, the consumers can move from one affiliate website to the other, while making purchases, without having to login into the Amazon system again. PayPal, on the other hand, gives users the ability to make payments through their credit cards or through deductions from their local bank accounts. This e-Check capability makes it more diverse in terms of making online payments.

3.1.2. Merchant Dependability And Reliability

For most online shoppers, it is important to be aware of the person with whom the trading is being carried out. It is also important for the online shopper or seller to create a good reputation with the online payment system to increase their chance of getting payments. Both PayPal and Amazon give user ratings to their online merchants and shoppers, giving other interested parties a chance to review the trade transaction histories of others before they agree to make or accept payments.

3.1.3. Security

Both Amazon and PayPal are founded on the SSL security technology, offering their users the same security that banks offer.

3.1.4. Fraud Protection

For PayPal users, fraud protection is only offered for purchases or payments of amounts that exceed \$50. These are termed as the “smallest” coverable amounts that the company is willing to compensate. If the amount is smaller than this, then compensation is not awarded, whatever the case. Realizing this, fraudsters and other computer hackers have repeatedly scammed online shoppers for amounts that are less than this “tiny transaction amount,” as they are sure that there will be no follow up on the matter (Wright, 2002). PayPal’s payment resolution is also a conflicting issue, with most users claiming that the company disables users’ accounts instead of resolving the conflicting issues. Amazon, on the other hand, offers 100 percent protection of consumers from fraudsters and offers 100 percent refunds for amounts lost while shopping using the online system. However, the incident must be reported within 60 days of its occurrence.

3.1.5. Fees For The Receipt Of Payments For Consumer’s Website

Depending on the level of a particular PayPal user, payments to the company are rated between 1.9 percent and 2.9 percent of the total business sales that are made online using the company, sometimes paying 30 cents for every transaction. Amazon, on the other hand, charges a flat rate of 2 percent and 20 cents for every transaction that is performed through the company’s website or any of its affiliate websites. Additionally, Amazon allows the users to use the AdWords functionality to reduce the cost of performing transactions online. This functionality is available for PayPal users (Wright, 2002).

3.1.6. Customer Service

It is worth noting that PayPal offers a customer service line that is manned by live people (either through chat rooms or by phone). Amazon, on the other hand, is sometimes

extremely hard to contact by phone, unless the user is willing to reach them through the online forums and/or emails.

In conclusion, one of the primary advantages that Amazon has over PayPal is its integration with the AdWords, implying that a consumer can get preferred prices on a number of goods and services that are available for sale. This also helps the said users to automatically make online payments with points that have been earned from the use of AdWords. In addition, if an advertisement of a product that is placed on another website is clicked, a shopping cart appears on this website, making it easier for the sellers to increase the level and volume of their sales. With PayPal's Business Traders/Merchants Account, a variety of advantages are available for the online users, primarily because there are a great number of users using PayPal's range of services and features. These features include its invoicing, shipping capabilities, tax calculations, consumer information options as well as the reception of banking statements.

The next chapter discusses the drawbacks that are seen in Lab III and discusses how they can be solved. It consists of a questionnaire/survey the students are asked to take. This questionnaire will help to understand the needs of the students' payment system and recommend a payment system that would best fit their business needs.

CHAPTER 4. QUESTIONNAIRE/SURVEY

The drawback of Lab III is that students are asked to pick how important each factor is for their payment system. They can either pick extremely important, highly important, important, or least/not important. But the students might not be aware of how the factor would help build their ideal payment system. The below questionnaire/survey is developed to solve this problem. The questions that the students are asked to complete gives a scenario of the factor instead of just the factors so the students understand it better.

This questionnaire/survey is developed based on the research done on how to develop a survey. This survey is developed by following four steps. The initial step is to know the goal of the project; the second step is to analyze the data that is in the Lab II; the third step is to frame the questionnaire and the last step is to determine the choices to be provided to the students.

Students are asked to complete the following questionnaire/survey to reflect on the payment system that would best suit their online business idea. The questionnaire consists of a series of questions that are framed to understand the requirements of the payment system that the students would like to have. Each question has three options: agree, disagree and neutral and the students are asked to pick one. For every choice the students make, appropriate ratings are assigned.

4.1. Questionnaire

The questionnaire looks like the one below:

1. Would you want the online Payment Service Providers to retain records concerning any online payments that are made within the system?
 - Yes

- No
 - Neutral
2. Does it concern you that the online payment service knows the types of things that are purchased when shopping online?
- Yes
 - No
 - Neutral
3. Would you like to guarantee your consumers that their information will not be accessed by others while carrying out the transactions?
- Yes
 - No
 - Neutral
4. Do you want your consumers to use the payment system without having to share their personal details with the intended vendors?
- Yes
 - No
 - Neutral
5. Would like the system to send an e-mail to the customers, informing them of a processed transaction?
- Yes
 - No
 - Neutral

6. Do you want your consumers to have the capability of making small payments through the online system (such as those for articles, recipes, poems, stories, and other products and services)?
- Yes
 - No
 - Neutral
7. Do you want your customers to be able to make mass payments to more than one person using one single transaction?
- Yes
 - No
 - Neutral
8. Are you going to charge the same rates for small, medium and large online transactions made by the consumers?
- Yes
 - No
 - Neutral
9. Would you like to provide users with an “always-on” capability?
- Yes
 - No
 - Neutral
10. Do you want your consumers to have to install other software programs in order to access the online payment system?
- Yes

- No
- Neutral

11. Do you want your consumers to have different levels of registration, limiting the amount of money they can transact at any given time?

- Yes
- No
- Neutral

12. Would you like to provide backups for users' transaction information?

- Yes
- No
- Neutral

13. Would you like to allow your users to de-register if they feel that the system is untrustworthy?

- Yes
- No
- Neutral

14. Would you like to impose the social-cultural acceptance of the established system that has been used for a long period of time on your consumers or a new system, whose trust has not been well tested?

- Yes
- No
- Neutral

15. Do you want your consumers to sign a Service Level Agreement to gain their trust?

- Yes
- No
- Neutral

16. Do you wish to guarantee your customers full refunds on all money lost while carrying out online transactions using your system?

- Yes
- No
- Neutral

17. Do you wish to temporarily freeze or permanently disable the accounts of your consumers if a complaint is made about their online transaction history?

- Yes
- No
- Neutral

18. Do you wish to limit access to the online system by using verification and identification techniques that will ensure that only the authorized account holders are allowed to carry out transactions using the account?

- Yes
- No
- Neutral

19. Do you wish to target consumers from every geographical location in the world?

- Yes
- No
- Neutral

20. Do you want the transactions from all locations to be able to freely send and receive money from other locations in the world?
- Yes
 - No
 - Neutral
21. Do you wish to provide the consumers with a system that is easy to access even if they are not tech-savvy themselves?
- Yes
 - No
 - Neutral
22. Do you want your payment system to give more flexibility in terms of convertibility of funds?
- Yes
 - No
 - Neutral
23. Do you wish to provide your consumers with a currency converter?
- Yes
 - No
 - Neutral
24. Do you wish to give your consumers the capability of reviewing the history of their online conversion transactions?
- Yes
 - No

Neutral

25. Do you wish to provide your consumers with a user-friendly system design, where all the components can easily be accessed by clicking on the available links?

Yes

No

Neutral

26. Is it okay if the users “get lost” while browsing the system?

Yes

No

Neutral

27. Do you wish to offer your consumers a system which they can use in different websites without having to login every time?

Yes

No

Neutral

28. Do you wish to offer your consumers the capability of seamless transactions with other payment service providers as well as banks?

Yes

No

Neutral

29. Do you wish to offer your consumers the capability of making deposits and withdrawals directly to their bank accounts?

Yes

- No
- Neutral

30. Do you wish to offer your consumers interoperability with other affiliate websites without necessarily losing their Sign In information?

- Yes
- No
- Neutral

The next section explains the rating that is assigned for each of the options picked by the students and how this rating is assigned.

4.2. Ratings Assigned As Per The Selections Made By The Students

The ratings assigned to each of the options chosen by the student are based on the research done on the payment systems (Lab II). The option “neutral” is assigned a value 5 for all the questions. This assumption is made because when the user chooses neutral, it means that the user is uncertain of the question.

A. Privacy

1. Would you want the online Payment Service Providers to retain records concerning any online payments that are made within the system?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated as 6. If the student chooses “no”, PayPal is rated as 3 and Amazon is rated as 4. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal retains the user’s information, guaranteeing its consumers that they can carry out online shopping activities without having to share their personal details with the other party in the transaction. However, registration information is necessary during

activation. Amazon also retains customer personal information about their banking details. However, not much information from the customer is required in this case.

2. Does it concern you that the online payment service knows the types of things that are purchased when shopping online?

If the student chooses “yes”, then PayPal is rated 2 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 8 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Not much information is requested from the customers of PayPal in order to carry out shopping activities on eBay. The organization does not concern itself with the products that are purchased by the consumer. Amazon, being a direct affiliate of Amazon.com, is closely concerned with the products that are purchased by the consumer.

3. Would you like to guarantee your consumers that their information will not be accessed by others while carrying out the transactions?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 5. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 5. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Though both systems guarantee that the consumers’ information will not be accessed by others, PayPal’s dedication to privacy and security of consumer information is better than Amazon’s, with regard to the fact that users of Amazon are free to move to other affiliate websites, making their personal information prone to prying eyes.

4. Do you want to have your consumers use the payment system without having to share their personal details with the intended vendors?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 2 and Amazon is rated 2. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Both systems guarantee the users that their personal information will not be shared with the vendors.

5. Would you like the system to send an e-mail to the customers, informing them of a processed transaction?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 2 and Amazon is rated 2. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Both Amazon and PayPal send a confirmatory e-mail after a transaction has been processed.

B. Efficiency

1. Do you want your consumers to have the capability to make small payments through the online system (such as those for articles, recipes, poems, stories, and other products and services)?

If the student chooses “yes”, then PayPal is rated 5 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 5 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon allows users to transact even the smallest amounts. PayPal charges a flat rate of 2.9 percent + \$0.30 USD for transactions falling below \$3000.

2. Do you want your customers to be able to make mass payments to more than one person using one single transaction?

If the student chooses “yes”, then PayPal is rated 8 and Amazon is rated 0. If the student chooses “no”, PayPal is rated 2 and Amazon is rated 8. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

By embedding APIs into the system, PayPal allows users to make mass payments to a given number of people at a given time, a feature that is not present in Amazon.

3. Are you going to charge the same rates for small, medium and large online transactions made by the consumers?

If the student chooses “yes”, then PayPal is rated 2 and Amazon is rated 2. If the student chooses “no”, PayPal is rated 8 and Amazon is rated 8. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Both systems do not allow users to pay the same rates for different amounts of money transacted.

C. Acceptability of the system

1. Would you like to provide users with an “always-on” capability?

If the student chooses “yes”, then PayPal is rated 4 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 6 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Through the use of the Dynamo system, Amazon is able to guarantee the “always on” capability, a feature that is not available in PayPal. The system has been known to crash many times, leading to financial losses to the consumer.

2. Do you want your consumers to have to install other software programs in order to access the online payment system?

If the student chooses “yes”, then PayPal is rated 3 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon requires the installation of Flash player plug-ins as well as Dynamo enablers to operate efficiently.

3. Do you want your consumers to have different levels of registration, limiting the amount of money they can transact at any given time?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 2. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 4. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal allows users to transact without having to add a bank account to the PayPal account up to maximum amounts of \$1,000.

4. Would you like to provide backups for users’ transaction information?

If the student chooses “yes”, then PayPal is rated 8 and Amazon is rated 2. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 7. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon has faced many failures, though backup is not necessarily guaranteed. PayPal’s failures have been fewer, with the organization providing backup for users’ information.

D. Trust

1. Would you like to allow your users to de-register if they feel that the system is untrustworthy?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 1. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Both PayPal and Amazon accounts can be closed after they deem the system untrustworthy. However, one cannot close their account if there are limitations, unresolved issues, or a balance due.

2. Would you like to impose the social-cultural acceptance of an established system that has been used for a long period of time on your consumers or a new system, whose trust has not been well tested?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 4. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 6. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal is an old system that has been used and trusted for years. Amazon is a relatively new system, not yet very trusted by consumers.

3. Do you want your consumers to sign a Service Level Agreement to gain their trust?

If the student chooses “yes”, then PayPal is rated 5 and Amazon is rated 8. If the student chooses “no”, PayPal is rated 2 and Amazon is rated 0. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon requires the users to sign a high-level SLA at registration. PayPal requires its users to agree to the terms of service of the organization.

4. Do you wish to guarantee your customers full refunds on all money lost while carrying out online transactions using your system?

If the student chooses “yes”, then PayPal is rated 6 and Amazon is rated 6. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 1. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Both Amazon and PayPal guarantee its users full refunds in case of losses during the transaction. However, the claim has to be made within one month of the transaction.

E. Accessibility for new users

1. Do you wish to temporarily freeze or permanently disable the accounts of your consumers if a complaint is made about their online transaction history?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 4. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 6. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal freezes or disconnects the user accounts if complaints are made about the particular user; Amazon does not disconnect users until full investigations are made.

2. Do you wish to limit access to the online system by using verification and identification techniques that will ensure that only the authorized account holders are allowed to carry out transactions using the account?

If the student chooses “yes”, then PayPal is rated 4 and Amazon is rated 7. If the student chooses “no”, PayPal is rated 6 and Amazon is rated 2. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

The verification and authentication systems are more profound in Amazon than PayPal.

3. Do you want consumers to be able to freely transact from other locations in the world?

If the student chooses “yes”, then PayPal is rated 1 and Amazon is rated 8. If the student chooses “no”, PayPal is rated 9 and Amazon is rated 1. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal does not allow users to receive money from certain geographical locations.

4. Do you wish to provide consumers with a system that is easy to access even if they are not tech-savvy themselves?

If the student chooses “yes”, then PayPal is rated 4 and Amazon is rated 8. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 1. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon users do not have to be tech-savvy to be able to use the system. It is relatively easy to use when compared to the PayPal system.

F. Convertibility of the funds in the system

1. Do you want your payment system to give more flexibility in terms of convertibility of funds?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 4. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 6. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal’s convertibility is more profound as it allows users to upload and send money from a large number of geographical locations with different currencies.

2. Do you wish to provide your consumers with a currency converter?

If the student chooses “yes”, then PayPal is rated 4 and Amazon is rated 5. If the student chooses “no”, PayPal is rated 2 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon, under express request from the consumers, provides its users with a currency converter that is meant to give users the capability of making online conversions “at the click of a button”. PayPal provides its consumers with a currency converter though its capability is not as profound as Amazon’s.

3. Do you wish to give your consumers the capability of reviewing the history of their online conversion transactions?

If the student chooses “yes”, then PayPal is rated 8 and Amazon is rated 2. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 5. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal allows users to review the history of their online transactions, on request. This history can also be deduced from the e-mails that are sent to the consumer on every transaction. Amazon does not readily give information on previous transaction history.

G. Interaction design/Usability

1. Do you wish to provide your consumers with a user-friendly system design, where all the components can easily be accessed by clicking on the available links?

If the student chooses “yes”, then PayPal is rated 8 and Amazon is rated 2. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 6. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal is touted as being one of the most user-friendly payment systems, with an even friendlier website that is easy for users to navigate. Amazon's system is much more complicated and sometimes has too much information.

2. Is it okay if the users "get lost" while browsing the system?

If the student chooses "yes", then PayPal is rated 2 and Amazon is rated 7. If the student chooses "no", PayPal is rated 8 and Amazon is rated 2. If "neutral" is chosen, then both Amazon and PayPal receive a score of 5.

PayPal's system is user-friendly and it is not possible for users to get lost.

3. Do you wish to offer your consumers a system that they can use in different websites without having to login every time?

If the student chooses "yes", then PayPal is rated 4 and Amazon is rated 6. If the student chooses "no", PayPal is rated 2 and Amazon is rated 1. If "neutral" is chosen, then both Amazon and PayPal receive a score of 5.

Amazon was built as a system with the capability of networking with other affiliate websites, without necessarily requiring the users to login after every visit. PayPal also allows users to transact from other websites, but login information is required every time a transaction is made.

H. Interoperability of the system in relation to other payment systems

1. Do you wish to offer your consumers the capability of seamless transactions with other payment service providers as well as banks?

If the student chooses "yes", then PayPal is rated 7 and Amazon is rated 7. If the student chooses "no", PayPal is rated 2 and Amazon is rated 2. If "neutral" is chosen, then both Amazon and PayPal receive a score of 5.

PayPal and Amazon offer seamless interaction capability with banks, for both withdrawals and deposits.

2. Do you wish to offer your consumers the capability of making deposits and withdrawals directly to their bank accounts?

If the student chooses “yes”, then PayPal is rated 7 and Amazon is rated 5. If the student chooses “no”, PayPal is rated 1 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

PayPal allows users (in most geographic regions) to make online transactions/withdrawals directly into their bank accounts. Regional issues sometimes prevent Amazon users from making these deposits.

3. Do you wish to offer your consumers interoperability with other affiliate websites without necessarily losing their Sign In information?

If the student chooses “yes”, then PayPal is rated 5 and Amazon is rated 6. If the student chooses “no”, PayPal is rated 3 and Amazon is rated 3. If “neutral” is chosen, then both Amazon and PayPal receive a score of 5.

Amazon offers more interoperability with online systems, most of which are affiliates of the online store, Amazon.com. Though this interoperability is also offered in PayPal, some websites require the consumers to log in for every visit.

The next chapter talks about the conclusion, limitations and future work of the paper.

CHAPTER 5. CONCLUSION, LIMITATIONS AND FUTURE WORK

This chapter explains how Bloom's taxonomy of cognitive domain is used to develop an online course that enables students to learn about electronic payment systems. This chapter also describes the limitations of the paper and the way this paper can be extended for future cases.

5.1. Conclusion

All the labs developed in this paper make students reach certain lower levels of Bloom's taxonomy of cognitive domain. With Lab I: Introduction to Electronic Payment Systems, students learn and understand the basic terminology and concepts of electronic payment systems. In Lab II: Comparison between Amazon and PayPal payment systems, students learn and understand the importance of each factor responsible in choosing a payment system and the difference between Amazon and PayPal payment systems. Finally, in Lab III: Recommending a payment system using the decision support tool, students apply all the knowledge learned in Lab I and Lab II by picking the factors that they would like to see in their own online business and get the best payment system.

5.2. Limitations

The teaching material developed has not yet been tested with students.

5.3. Future Work

The questionnaire/survey that is developed in Chapter 4 can be implemented as part of the decision support tool where the student receives recommendation of the payment system when the questionnaire/survey is submitted.

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