



## Internet Banking Development

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### Abstract

We observe the development of an internet banking institution and learn that such an institution can fall into many pits on its growth and development. The same is true for its client as they utilize internet banking as a loan client, depositor or any other service provided by the internet banking process. By observing the benefits of learning quality control and continuous improvement as practiced in industrial experimentation, one can avoid many of the pitfalls associated with the management of an internet banking process as well as being a consumer participant in the system. We note the difficulties with which new computer users and internet banking entails is less technological actions. Computer software developers must also use these quality control and improvement practices in the development of software in this internet banking process to facilitate with an error free result the consequences of the transactions made in the on-line process. Software should be easy to learn and the likelihood of errors be kept to a minimum in a manner similar to operations in rocket science where the consequences of failure are thought to be close to zero.

**Keywords:** Internet banking; Fraud; Data analytics

### Introduction to Development of an Internet Bank

An internet banking firm in its start-up phase decides to use impress upon its future clients and depositors a new method by computer software to have them create their own competence in handling communications, loans and deposits with the internet bank. They develop software in a manner similar to scientific software for handling problems associated with mistakes by the clientele, depositors and personnel of the internet bank. The purpose is to build confidence by the customers in handling the various computer actions taken during the decision making characterized by loans, deposits and other commercial transactions handling during the interface of the customer and the internet bank. They read about the pitfall denoted by others in previous manuscripts written by others [1-4] and software consulting in the information technology industry. Often the data analysis and data analytics terms are used to describe the techniques in developing the software.

To determine when software processors are “out-of-control”, one utilizes industrial experimentation and quality control by creating a null hypothesis that the software process is “in-control.” An alternative hypothesis would be the software generated process is “out-of-control”. By following the teachings and literature written by Shewhart and Deming [5-8] two of the great industrial statisticians of the past century, the out of control hypothesis indicates that the software process needs adjustments because it is finding too many errors in the systems or too few errors in the system. For example, a loan officer in studying the system may ascertain that a certain class of customers have been accepted for large loan far and above the limits applied to such loans for these previously risky investments. Is it because the parameters for approving such loans need to be adjusted or possible there is a “glitch” in the software used in the process for granting the loan. Another possibility is that loan applicants do not understand the questions utilized in the loan application software and make too many

errors in filling out the loan application or possibly the software itself misinterprets the answers given by the loan applicants. Last, the software can have errors associated with malware and computer viruses entering the system or consumers misapplying the protection given by anti-virus and anti-malware software within the system.

### Data Analytics

For the loan managers, they may do a multiple regression study to study have the probability of loan repayment is associated with one or more variables describing the loan characteristics of the applicants. The loan manager and the staff must determine the “p-value” to communicate the probability or likelihood of finding a relationship when no such relationship exists. This is called the Type I error and the probability is the alpha-risk. The “beta-risk” is the probability of not finding an error when the error is present. The loan manager and software developer may use these data analytics to make the process of internet banking be from the vast number of error that may apply. In these analyses, the data analytics finds the relationships between the processes being checked for accuracy and those factors that are associated with them. In no way, is this analysis stating that the variation in the process is caused by the variation in the associated variable or variables. A secondary study is necessary for determining what may be the causative effect of the variable that is concluded to be the associated variable. There are analytical methods for showing such causation (Granger Causality) but they are limited to the assumptions utilized to develop those methods. However, Granger Causality has been widely utilized in industrial and economic experiments.

The development of modern internet banking systems in developing nations is the source of many problems occurring in the development of these systems. Two such studies in the past decade indicate how difficult for some to integrate internet banking into the current systems. Usman and Shah [9], Mermod [10] and Xue et al. [11] produced case studies and recommendation on how two lessor developed nations who began the implementation and use of internet

banking on a large population of customers. One of the most difficult problems is that of internet fraud which also characterized much of the development of such activities in more sophisticated nations where computer users have better knowledge of the operations of E-commerce and computers in general. These problems include the fraud emanating from internet banking services as a result of false security. Security breakdowns are a result improper mountainous and control of the security systems currently and previous utilized in E-commerce in general and banking systems in particular. Practitioners, for example, rarely do research of the type proposed in this manuscript leading to the loss of confidence in the systems demanded by consumers and other stakeholders. The previous studies indicated to developers those factors that contribute to the false security felt by users. Examining and doing continuing research into those factors by E-Bankers would aid in bringing confidence back into the system

As an example of how the system can produce loss of confidence, consider a similar problem in the filing and properly identifying the tax obligations of citizens with their Federal and State Income taxes. Many, today, file electronically and pay their tax obligations electronically and in the United States that may become universal in the near future. (Note: there will always be exceptions). Those who technically educated often feel competent in filing themselves with the Federal and State authorities. They purchase high priced technical internet software to do much of the work needed to correctly file and avoid penalties and cumbersome methods to prepare the tax statements. This often includes having the tax preparation software directly contact E.Banking and E.Financial Service Centers to correctly download to the tax preparation software the financial and other information to ease the burden of tax statement preparation. Often, these information sources are not error free nor transparent to the tax preparation software leading to mistakes and even worse tax penalties. This author can verify that errors occur in computation and the interpretation of Tax laws and regulations leading to substantial tax rebates from the Federal Income tax. Unlike the mistakes that occur from taxpayers return in which they owe more in federal taxes where penalties are involved, the government does not pay a penalty if the tax software errors. The misreported tax obligation is return to the tax filer but no penalty is paid by the financial firm which develops or uses the tax filing software. Their only penalty is that imposed by customers who will refrain from using the financial software in the future.

## Fraud

Fraud and computational problems must be assessed by someone. E-Bankers and E-Financial Service producers must be made aware of by useful quality control and continuous improvement personnel. Totally relying on the industry to police themselves will probably be the argument utilized by the financial industry to avoid any controlling legislation to prevent these problems. This argument is always utilized by those who fear that their practices both illegal and poorly operated legal systems will eventually be dealt with by the "invisible hand of competitors." This argument is often used in a deceitful way to avoid building confidence in computer systems.

One of the only arrears in internet banking that is growing considerably is that of fraudulent banking processes on line. One can easily side that one leads to the other. Fraudulent banking processes grew large to predatory banking process including the huge increases in banking fee, increase in penalty charges, and the predatory practice of treating and overdraft in the use of a so-called "debit card" by customers. The practice was to treat penalty in the same manner as if

one had written an overdraft check on a checking account. Loan arrangement also have predatory practices in the form of loans with hugely high interest rates such as college loans and other loans granted to students without the protection bankruptcy laws. These and other techniques implemented by the financial industry at all levels were documented by others [12]. Documentation is not the only way in which problems are known in predatory banking and internet banking systems. The studies previous made do not fully investigate the predatory acts. Often these studies are of case studies of individual events in the industry and/ or samples not requiring mandatory response, hence, nonscientific sampling limiting the statistical analysis and data analytical investigations of the resulting data from the collection, interpretation and scientific interpretation methodology.

Before we finish our discussion of the internet banking and the related quality control and continuous improvement methods, we must note Schneir [13] who speaks about the problems associated with collecting data and using it to solve problems in analyzing the results of private market decisions. We are in an age where firms collect and use data easily secured from internet sites. Marketers have successfully sold the notion of "big data" to industrial and service industries that these data can predict when profitability of competitors increases when new marketing opportunities can discover new sources of profitability. When successful they can predict sources of cash flow funds for competitive advantage. "Big data" are not the result of scientific studies and often lead to the misappropriation of funds, misallocation of resources and/or may indicate where predatory polices produce decisions by firm which are not illegal but may violate or take advantage of those who are not knowledgeable of the details and end results of their decisions done on the internet. Computer network knowledge must be learned by internet users and not obtained by internet services designed to confuse and worse to mislead the consumer. Schneir [13] indicates problems associated with E-Banking and use of "Big Data" in determining methods by which these strategies may be utilized to misinform and mislead less sophisticated consumers and lead to the high likelihood of fraud. These methods for improvement are scientific samples and the employment of industrial experimental methods in the internet banking industry.

## Entrance of Data Analytics

The problem of Type I and Type II errors is not to be taken lightly when considering the thresholds used for establishing what is referred to as "statistical significance." All this has a relationship to the concept of the p-value noted earlier. Debates over the size of the p-value with reference to concluding that a software process is out-of-control or not is crucial in legal matters. What is the appropriate p-value in determining the weight of evidence in a case of capital crime is very different than in a case involving a dispute over the right to use land for development. One may destroy a small water hole or one may be accused of raping another being requires that deferent p-values and to commit a Type I error; stated differently, the a-risk should differ. Cases involving the death penalty should have different burdens of proof applied than cases not involving the death penalty. All this applies to the level of error and hence, p-values must differ in applying data analytics to the development of software for the internet banking system.

Hence, the setting up of what is an acceptable risk level for making decisions in developing internet systems represents what constitutes the level of error in the process of developing efficient and error-free systems. The setting of the magnitude of p-values is thus, crucial in

determining what is affordable and profitable in an internet banking system. Most important, internet customers must become aware of the deficiencies in the internet banking system and learn what is meant by controlling quality and continuous improvement in the operation of internet banking. Scam artists abound and knowledge of the computer software in use by your internet banker is fundamental to keeping your records safe from viruses, malware and others who seek to practice devilish techniques.

## Conclusion

One last point, refers to whether that these methods apply in other areas as well. The answer is undoubtedly positive. One can see [3,4] where both internet solutions and data analytics were merged into solutions in the health care services industry and in particular bio-surveillance. The merging of these industries and use of continuous improvement and quality management. All the problems of integrating banking and the internet appear in applying the internet and data analytics to solve and increase the services of Internet Banking.

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