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Integration of Multi Bank Multi user in Single Card With user Behavior Monitoring using Hmm & Formula Verification

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***Abstract*— Usage of ATM cards for transaction has become very common, hence managing of multiple accounts becomes tedious. A solution to this issue is to integrate multi bank multi user in a single card along with user behavior monitoring. In this system Big Data, Business analytical and RFID like technology are integrated to provide solution to this most challenge oriented activity. The implementation involves developing an application for a Banking sector particularly for a Debit / ATM card section. RFID smart card is used as ATM Card for transaction, users can create account and get the card from the bank.They can access their cards with unique identity numbers accordingly. Users can include their family members' accounts details in the same card and their behavior is monitored through HMM algorithm, verified using OTP and authenticated using formula based method. They can withdraw cash from their accounts after successful authentication of the corresponding PIN numbers and OTP along with formula based authentication.**

***Keywords*— Big Data and Data Analytics, Integration of multiple accounts, HMM monitoring, formula based authentication, OTP generation**

I. INTRODUCTION

INFORMATION technology (IT) not only introduces convenience, but creates many new improvement opportunities which were impossible in the past. For example, advances of business intelligence (BI) methods and data mining techniques have brought huge improvements to modern business operations. Nowadays, in the "big data era," a massive amount of data is available for all kinds of industrial applications. For example, the cloud service can be considered as a data warehouse which provides a useful source of data. Wireless sensor networks [e.g., radio frequency identification (RFID), near field communications] can be used to collect
useful data ubiquitously. An evolving topic on the Internet of things (IoTs), which consists of devices capable of communicating through internet. They also provides a platform for gathering an enormous amount of data. In other words, it is now easier to collect data better than the olden techniques. That being said, extracting and utilizing useful information from such huge and dynamic databases for "big data" is far from easy. Since these data are linked to real-time events, they can be employed, if properly (e.g., via BI schemes), for rescheduling or replanning activities in business applications which finally reduce the level of risk and improve profits and efficiency of various operations. This without any doubt can supplement various optimization techniques, which are a priori in nature. For instance, Zhang et al. [122] considered a dynamic workload scheduling problem with the help of big data stored in distributed cloud services. They developed an evolutionary optimization algorithm and simulated the performance under different scenarios. In another study, Zhang et al. analyzed the cost minimization issue of moving data around geographically dispersed data. Such data migration problem is very important yet challenging as the volume of big data is growing quickly. Dou et al. Developed a service optimization model for handling big data stored in cloud systems when privacy is a critical concern (e.g., the medical data). Service quality maybe compromised if a cloud server refuses to provide the data due to the privacy issue. Such optimization model can maximize the service quality and is verified by a simulation study. Another application of big data is on smart grids. Simmhan et al.predicted the demand of a cloud-based smart grid system and derived the optimal pricing strategy, based on the big data on real-time consumption. The approach is possible due to the data mining algorithm the authors developed. The relationship between cloud systems and big data models will be further discussed in Section II. Owing to the importance of big data analytics for business applications, this paper is developed. With respect to the core topic on big data analytics for business operations and risk management, we organize this

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paper into three big sections, namely:
1) BI and data mining;
2) industrial systems reliability and security; and
3) business operational risk management (ORM).
Each of these sections: 1) examines some carefully selected papers; 2) outlines the related research challenges; and 3) proposes the future research directions. To the best of our knowledge, this is the first paper in the literature which focuses on how big data analytics can be employed for reducing systems risk and enhancing efficiency in business operations.

II. EXISTING SYSTEM

Big data analytics would definitely lead to valuable knowledge for many organizations. Business operations and risk management can be implemented and improved in a most beneficial manner (e.g., wireless sensor networks, Internet-based systems, etc.). Information technology(IT) not only introduces convenience, but creates many new improvement opportunities which were impossible in the past. For example, advances of business intelligence(BI) methods and data mining techniques have brought huge improvements to modern business operations. In the "big data area" large amount of data is available for all kinds of industrial applications. Service quality may be compromised if a cloud server refuses to provide the data due to the privacy issue. Such optimization model can the service quality and is verified by a simulation study. Another application of big data is on smart grid predicted the demand of a cloud-based smart grid system and derived the optimal pricing strategy, based on the big data on real-time consumption. RFID devices attached can be as IoT. The major distinction between IoTs and other traditional sensor networks (including the RFID network) is that considered they are Internet-enabled which means the objects are configured in an Internet environment. They developed an evolutionary optimization algorithm and simulated the performance under different scenarios. In another analyzed the cost minimization issue of moving data around geographically dispersed data. Such data migration problem is very important yet challenging as the volume of big data is growing quickly. Developed a service optimization model for handling big data stored in cloud systems when privacy is a critical concern (e.g., the medical data). There is no proper System is implemented for analyzing the Huge data. Data is Present at every part but none are properly utilized. There is no such a Kind of Tool like Hadoop is present in current Scenario to process such a Huge Data.

III. PROPOSED SYSTEM

In this system multiple accounts are integrated in a single card.
When the user creates an account a formula is to be attached to his/her account [any variable (a-z), arithmetic sign(+,-)]. The user name and password is created for all the users attached to that card. As the user swipes the RFID card, the window prompts for the username and password the user needs to enter the details based on which account he is willing to withdraw the account. If the user chooses his/her own account the user behavior is tracked using HMM , if there is the drastic change in the behavior the panel with variables and their corresponding value is displayed .
FORMULA BASED AUTHENTICATION: Based on the values displayed on the number panel the formula is computed and the answer computed is entered.
If the user needs to withdraw amount from the relative account the username and the password of the relative stored by the user at the time of initial registration is entered. The corresponding pin number of the relative account holder is entered and the amount is withdrawn.
If the amount crosses the limit specifies by the parent account holder then the behavior change is monitored and again the panel will be displayed with all the alphabets and the corresponding values in it. The corresponding value according to the formula of the account holder is again computed and is entered. If the value computed is correct the OTP is generated and the OTP value is to be entered in order to withdraw the money.

IV . MATERIALS REQUIRED

Hardware Requirements:

- Processor : Core i3/i5/i7
- RAM : 2-4GB
- HDD : 500 GB
- Embedded Fabrication Kit

Software Requirements:

- Platform : Windows Xp/7/8
- Front End : Java-JDK1.7
- Back End : MYSQL
- Embedded C
- Apache Hadoop -2.5.1

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Fig 1 – Working model to integrate and withdraw money from a single card.

V. FUNCTIONAL UNITS

A.Database for storage of user details:

The user needs to create an account and then they are allowed to access the Network. Once the user creates an account, they login into their account and requests the job from the service provider.

Based on the user's request, the service provider will process the user's request and respond to them. All the user details will be stored in the database of the Service Provider. The user Interface frame is designed to Communicate with the Server using programming language like java. By sending the request to Server Provider, the User can access the requested data if they are authenticated by the Service Provider. Bank Service Provider contains information about the users in their Data Storage.

Bank Service provider also maintains all the User information that are required for the authentication of the user at the time of logging into the account. The User information will be stored in the Database of the Bank Service Provider. To communicate with the Client and the with the other modules of the Company server, the Bank Server will establish connection between them. For this Purpose User Interface Frame is created.

First the User wants to create an account and then only they are allowed to access the Network. Once the User creates an account, they are to login into their account and request the Job from the Service Provider. Based on the User's request, the Service Provider will process the User requested Job and respond to them. All the User details will be stored in the Database of the Service Provider. In this Project, we will design the User Interface Frame to Communicate with the Server through Network Coding using the programming Languages like Java. By sending the request to Server Provider, the User can access the requested data if they authenticated by the Service Provider.

B. Integration of Multiuser Multibank accounts:

Design and implementation of family member registration is considered. Using single card like credit and debit for entire family members. But maintain unique PIN numbers for different banks.

We will provide a button add "Family card" in our user card. Now user can add his family members bank atm details also along with pin number details.

User can include like further bank account no, bank name, pin number same way for other family members.

C.Tracking transaction using HMM:

Hidden markov model used for user behaviour analysis of cash withdrawal. Hidden markov model is applied to understand users money withdrawal sequence in which first condition is total amount withdrawal in every month.

Second one is Frequency of withdrawal of money using credit card. User can withdraw the cash as per money requirement and time frequency is also monitored & recorded.

During registration of the card, user has to give a formula for secured authentication system. User can also add multiple bank accounts in single card.

D. Formula Based Authentication:

In this module, We provide security by using formula like (A+B-C) while registration. In this formula using alphabets and two operators like (+ and -).

The formula is constant, but numbers will randomly change for every transaction.

User is not required to provide the formula at any time, user is only required to submit the answer after substitution of the corresponding values in their formula.

This formula based authentication is required only when user tries to withdraw money beyond the permitted 10% extra and increases the withdrawal frequency.

Once user is registered by specifying his master bank account details & formula for authentication. Now user can add his family card details.

OTP Verification:

Once the behaviour change is detected in the pattern of

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withdrawal of money. The number panel is displayed along with all the alphabets and the corresponding values.

After the value is verified the OTP is sent to the electronic mail or to the registered mobile number.

The OTP received is entered in the prompted dialogue box and if the correct OTP is entered the amount requested is withdrawn.

VI. SYSTEM DESIGN

The user registers his/her personal details along with the bank account details and they are updated and stored in the server. In the single card the details of the family members are again updated with the single card number. The username and password for the integrated accounts are created and it can be later used to withdraw money from different accounts

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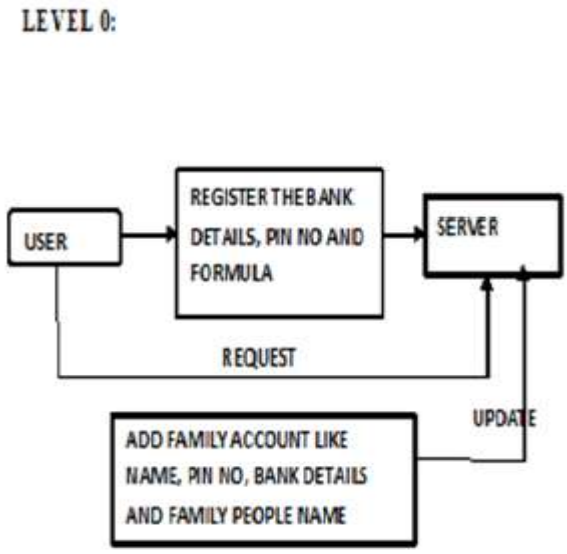

Fig 2: LEVEL 0

The user requests for withdrawal of money to the server. The username and password of the user is entered and requests for money withdrawal.The corresponding pin number of the user is entered. The pin number is verified.If the pin number and the account number matches the user is authenticated and the it checks for balance. If the requested amount is within the limit of the account balance the amount is granted.

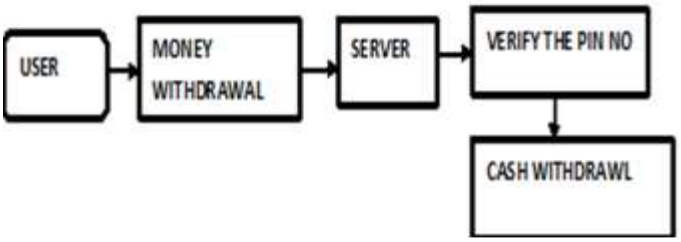

Fig 3: LEVEL1

The user behavior in tracked and stored as a huge amount of data. The entire user data is stored in the database. The data is analyzed and tracked based on the excess amount withdrawal, frequency of money withdrawal and various other criteria. For this functions HMM algorithm is used.If the change in the behavior is detected , the formula based authentication is implied in it to ensure only the authenticated user withdraws money from the account.

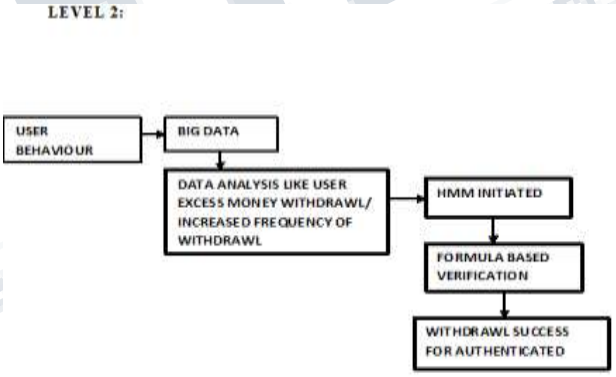

Fig 4: LEVEL 2

VII. CONCLUSION

There is sufficient supporting evidence to conclude that data-driven approaches would be a growing research methodology/ philosophy in business operations. Countless application domains can be influenced by this big data fad. BI systems are definitely on the list as such systems highly rely on the input data to generate valuable outputs. That being said, the scope of BI systems is so wide and related research involved the multidisciplinary knowledge. Hence it is not surprising that the research focal points have been scattered around different disciplines. Consequently, it is not

easy to generalize the results from previous studies. In this connection, emerging big-data-oriented research may need some adjustments. Synergizing multiple research methodologies could be one direction. Data mining is still the core engine of BI systems but previous data mining algorithms are very application-oriented. This is not a criticism but an observation. The main reason is due to the nature of the data involved. So, soft computing techniques may be more applicable in this regard. In addition, coupling with the big data era, it may be the right time to think about mining ontology's, rather than just algorithms.

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