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Analysis of Reformation in Biometrics for Conducting Elections by the Relationship of NADRA, Cellular Companies and Election Commission Pakistan

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Abstract

During the periods of democracy in Pakistan transparency regarding the over turn of the elections has always been an issue. The problems regarding rigging have been seen mostly during these eras, and the main cause except from the human error has been the traditional vote casting system, First Past the Post (FPTP). There are many other errors less methods by which elections can be conducted and without any hustle. The methods regarding electronic devices like E-Voting are very essential. By following all these methods, in present era to reduce rigging and human error, elections can be held by using such a system in which a collaborative role of Election commission of Pakistan, NADRA and cellular companies plays an important role by verifying, registering and casting the vote of voters. The focal point of research is that in which the System Development Life Cycle (SDLC) and Access Ladder is being used, and their relationship's shown through a hierarchy diagram. The relationship of phases of SDLC with factors of Access Ladder show how a problem statement can be explained which has the nature of a procedure. ECP will have the direct link with cellular companies and NADRA to conduct transparent elections.

Keywords: ECP (Election Commission Pakistan), FPTP (First Past the Post), SDLC (System Development Life Cycle), Access Ladder, Biometric System, Electoral System, Rigging, SMS (Short Message Service), NADRA

1. Introduction

1.1 Importance of pure Elections in Democracy:

The purpose for pure and best democracy could be possible only by pure and transparent elections because democracy plays an important role in the development and progress of the country. So for the selection of pure Democratic Party there should be pure system to conduct elections, but unfortunately in Pakistan there is not any accountable and proper system to conduct an election or to choose any pure party. Electoral system through SMS in Pakistan could have many advantages, as chances of rigging or corruption may reduce, it's a time saving process as to cast vote through SMS can reduce a lot of time of people and also save people from the trouble of lining up into rows, it's also a money saving procedure because to go on polling station to cast vote is economically a problem as people come out of their homes with the expenditure of money to cast vote and

mostly for poor people it is a big problem in Pakistan to have money, so by SMS process money can also save, people who have mobility issues such as many people don't go to cast their vote on the day of election due to laziness and women who have societal cultural barriers like many men don't allow their women to outside for the purpose to cast vote can easily cast their vote by SMS procedure. But for this system of SMS elections, people need to verify their Sims firstly and it is a tough and very important procedure, because by registration of numbers, there will become an easiness for NADRA to maintain transparency and accountability. There are many ways used for the verification of Sims, ATM, or other information about any problem. Although this electoral system in Pakistan through SMS is not practical and elections are held by manual procedure, it is just a theoretical discussion till now. But if this system is being implemented then electoral system of Pakistan will no more manual and there will be complete accountability and transparency. Elections by SMS can have many advantages, the main advantage which can be obtained only through SMS electoral system is transparency of elections which is not possible now by First Past The Post (FPTP) system, accountability is also a big benefit which can be gained only by SMS electoral system as in manual election no proper counting of errors and votes is there, so by this it will be very easy for election commission to count voters because these voters already registered in NADRA due to verification of Sims. Election commission can also know the expected turnout of votes due to verification of Sims and by this system of election through SMS, can increase the turnout of election because many people feel lazy to go out on polling station to cast vote and many educated people waste their vote due to rigging, so by SMS voting these problems may solve automatically. On the day of the election, there are many supporters of candidates who harass voters to cast a vote against their own desire on gunpoint to their party, thus due to fear of life many voters cast a vote against their determination, but by SMS voting this can be ended. Many women don't cast vote due to societal cultural barriers and waste their vote by living into homes, these women can cast vote easily by SMS and no need to go outside the four walls of home. It is economic by this way that in election, much of the money wasted on the printing of ballot papers, so by SMS voting, money can be saved. By getting these benefits, better and transparent results of election can also be gained. In past, electoral system of Pakistan was First past the post, in which the voter goes to the polling station to cast their vote, then a new system came named Biometric system, which made easier for the voter to cast vote because it was quite transparent system as compared to previous system of election but this system of election is also considered failed as take example of biometric elections which were held in Haripur, a city of Khyber Pakhtoonkhah, in which 54% of the votes were not able to identify. But in this new electoral system of voting through SMS the elections, which will be held in future, must be transparent, accurate, no chances of rigging, and no chance to use nonmagnetic ink, also become very easier for the voter to cast vote by living into four walls of the boundary especially for the females who were not allowed to cast their vote due to societal barriers. (Biometric polling in Haripur by-Election, 54% impression unverifies., 2015) (Biometric system technically unreliable, says ECP, 2015) (Atta, 2015)

2. Background

The purpose for pure and best democracy could be possible only by pure and transparent elections because democracy plays an important role in the development and progress of the country. So for the selection of pure Democratic Party, there should be a pure system to conduct elections, but unfortunately, in Pakistan, there is not any accountable and proper system to conduct an election or to choose any pure party. In Pakistan, any political party at the time of election with some power or weapons can force any educated or uneducated person to cast a vote against his/her own desire. Rigging and corruption are very common factors at each polling station on Election Day, police or other armed forces always there to conduct peaceful elections, but it is not an easy task to conduct peaceful and transparent elections in Pakistan.

2.1 *The electoral system in Pakistan:*

ECP Holds Elections with Biometric verification of voters: The system of voting continuing from the past centuries known as manual, majoritarian of First Past the Post (FPTP), and thus claimed by the majority of people and parties the chances and practices of rigging into polling stations. Elections were conducted recently in May 2013, and many cases were reported of rigging, corruption, and others. Due to this the election commission, NADRA and cellular companies of Sims tried an attempt to conduct elections through biometrics

system (A system in which the voter is verified by the NADRA and give his/her personal information to NADRA office, about their date of birth, name of mother, CNIC number, current Sim which he/she is using and others many more). This experiment of voting through the biometric system in Pakistan was failed badly as 54% of voters were not verifiable by NADRA and election commission due to the light impression of thumb and not having complete documents of voters to NADRA. But in case of voting through SMS is a very pure, economic and best way to cast a vote as by SMS people have no need to come on polling station to cast their vote, many educated people who waste their vote due to fair of rigging can cast a vote easily by SMS because voting by this will be very confidential and not any member of any political party can force people to cast vote to their party. Also, the chances of rigging and corruption may be ended because there was not any usage of magnetic ink which was used to cast a vote again by a single voter. As through biometric one single person can cast a vote many times, if he/she has contacts in polling staff and chances of rigging there, also it is very easy for the hackers to hack the biometric electoral system on the day of the election and may chances to change the whole results of the election. So elections through biometric are not successful. (B. Habib, J. Akhtar, and A. Asghar, 2015)(Biometric polling in Haripur by-Election, 54% impression unverifies., 2015)

2.2 Disadvantages of Biometric system:

First test of biometric elections was held in Haripur NA-19 but failed due to various reasons. As it was the first experimental test of biometrics in Pakistan but by this experiment it has been cleared that biometric system in Pakistan will not workable in elections like FPTP and results in corruption and rigging. Results of biometric also very different from actual results as there were 37924 voters registered in that area who can cast vote and 15723 people cast their vote by biometric system. 54% of the voters were not able to verify by NADRA because they have light or incomplete thumb impression on biometric machine and also NADRA had not complete records of these people. Thus this system has failed badly and only 46% people have complete thumb impression or NADRA recognized only these 46% people. According to election commission, whether this was an unsuccessful experience, but voting through biometric will be done for the next time. As all systems were failed in Pakistan of voting, then it needs to initiate the theoretical system of voting by SMS as practically because it has many features, it is an economic system as money saving process and voter's money can be saved which he/she spends to come polling stations to cast vote, security issues to lives of voters may be resolved by this as in election, party members of any political party harasses voters cast a vote against their wish, issues to many women may be solved easily because many women have not right to cast a vote due to the culture of society and male part of the family don't allow her to go out of the home to cast vote, so by SMS voting women can also cast a vote by using their legal right, many educated who waste their vote due to fair of rigging can cast vote by SMS because there is not any chance of rigging and corruption.(Biometric system technically unreliable, says ECP, 2015)

3. System Development Life Cycle (SDLC)

System Development life cycle (SDLC) is a software development life cycle. A software development life cycle is essentially a series of steps or phases that provide a model for the development and lifecycle management of an application or piece of software. Project management uses a conceptual model of system or software development life cycle (SDLC) that describes the stages in an information system development. (Capron, 2001)(B. Habib and J. Akhtar, 2014)

3.1 Planning and Requirement Gathering Analysis:

3.1.1 Implementation of Planning and Requirement Analysis on Voting System through SMS:

If this phase is going to apply on voting through SMS, then the first step is to plan the whole procedure and assess the needs required for this. First of all, identify the risk factors involved in this new procedure of the electoral system. What are the requirements of the new procedure as in which steps voter has to cast a vote by SMS? In past voting system, voter lined up in rows then goes to polling room to cast his/her vote. But by the planning of new voting system, a sketch needs to develop by Election Commission of Pakistan, NADRA and cellular phone companies. ECP (Election Commission of Pakistan) gather information of the new or existing voter by NADRA and verify this information from cellular phone companies. The data which ECP needs to gather or analyze about a voter is age, nationality, country, permanent address of the voter, the cell phone

number of the voter from which the voter will cast a vote. This gathered data verify from NADRA of, each individual voter and from cellular companies either the cell phone which the voter gave to ECP correct/applicable or not. (Capron, 2001)(B. Habib and J. Akhtar, 2014)

3.2 Defining/Designing Requirements:

3.2.1 Implementation of Designing Requirements on Voting System through SMS:

In case if the Government is going to implement system development life cycle on electoral system of voting through SMS, then there is a need to define or design the gathered data. First need to have a deep look on what the user requires as, in case of voting through SMS, the voter requires pure and transparent elections, and this can be possible by altering the existing system of voting with new SMS voting. Rigging is the beauty of Democracy but only to a limit, when the limit crossed then it becomes non-democratic election, and in First Past the Post (FPTP) system, rigging, and corruption are common factors. To overcome this problem, there is a need to change the electoral system of voting. In this phase readdress the lacks of the old electoral system and initiate a new project. (Capron, 2001)(B. Habib and J. Akhtar, 2014)

3.3 Developing the Project Architecture:

3.3.1 Implementation of Developing the Project Architecture on Voting System through SMS:

First of all, need to give a detailed featured specification of the new electoral system as voting by SMS. Layout the main characteristics and good/positive features of voting through SMS, by giving its whole procedure, benefits, security issues and then develop a new system of voting through SMS. As many women are not allowed to go outside to cast a vote, but by SMS voting system it can be easier for women to cast a vote by living within four walls of the home. All this procedure depends upon the ECP, NADRA and cellular phone companies as for how they all develop the procedure of voting by collecting data from voters and develop a comfort zone for the voter to cast a vote. This procedure is just imagination or structure till now; it is not being implemented in practical life so Government should make it applicable practically in order to reduce electoral problems. (Capron, 2001)(B. Habib and J. Akhtar, 2014)

3.4 Building or Developing the Product/Implementation:

3.4.1 Implementation of Developing Product on Voting System through SMS:

First of all there should be awareness workshops for new and old users to train them about usage of new system as many people who cast a vote by this new procedure they will not follow the exact procedure and also in this area almost half of the population is illiterate so they have no idea how to cast a vote by SMS voting procedure. There should be held workshops to train these people about the whole procedure of voting and also told them about the positive benefits of the system. Everyone should know the developed procedure which established by Election Commission of Pakistan, NADRA and those cellular phone companies from which the user buy the Sim and this newly developed system may be replaced by the newly developed system. In Election Commission of Pakistan if after the adoption of a new procedure of voting through SMS then it is the duty of ECP to replace the untrained staff with new members of literate people and should develop a system of testing the literacy of staff. (Capron, 2001)

3.5 Integration/ Testing the Product:

3.5.1 Implementation of Integration/Testing the Product on Voting System through SMS:

After developing the new module, step came for implementation or testing the new system. For example in case of voting through SMS, a new system is developed in which verification of voter happened in three phases as verification from the Election Commission of Pakistan, NADRA and cellular phone companies. Then need to integrate this developed system to replace the old one either it is acceptable in society or not. What are the main positive features of this newly developed system? How can be deficiencies overcome? How could the election commission of Pakistan have control over rigging and corruption? This system could be initiated in only a way if the testing result came positive, but if testing resulted in negative then it will not appropriate to initiate. (B. Habib and J. Akhtar, 2014)

3.6 Maintenance and Deployment in the Market:

3.6.1 Implementation of Maintenance on Voting System through SMS:

In this case, testing of the product depends upon the user. As talked earlier that even after testing only a small fraction of developed product should be released so in order to avoid problems. In case of the electoral system through voting if the researcher took the example of a biometric electoral system, then this system was passed through complete testing and integration process, but after testing this was initiated in Khyber Pakhtoonkhah (KPK), Haripur, then 54% voters were not verifiable due to some internal errors. So after experiencing this problem, ECP should apply a newly developed technique in only a small fraction to know the feedback of people, and after people responses, more fractions has to develop in a large quantity. (Capron, 2001)

4. Access Ladder

There are five types of Access Ladder. These are;

4.1 Assessment:

A test or action by which something or someone is going to assess by any person, the individual organization is known as assessment. To make a judgment about someone, something or act by which something is going to assess. Everything has an existence, something which has an idea or opinion about that existence is an assessment. Assessment is used to improve students' learning to refine some problems, and there is used an empirical data which fall into the category of assessment. To develop a deep understanding of students about something or to find out what students know about something then a process involved of analyzing and discussed information from multiple and diverse sources to develop knowledge about something or some fact. During the assessment of any fact or process there involve some basic steps by which assessment goes to a progressive level. These are planning and implementation of ideas about those facts. First of all, to develop an assessment of something there should be a problem statement. A problem statement team is going to briefly discuss the issue which needs to assess by an existing prescribed data or presented by them own. A good problem statement should answer all questions by basic research outputs. The person who is going to take part in research is a participant. If researcher asks his/her problem from a single person, then he/she become a participant of that research, but if the researcher is going to discuss the problem with the whole community, then people living in that community are participants of that research. Participants of the research play an important role in the accuracy of research. (Neumen)

4.1.1 Implementation of Assessment on the voting system through SMS:

First of all, the researcher will analyze the whole conducted procedure of voting by which people cast a vote in the past. The researcher is now able to make a hypothesis about all presumed facts of voting through SMS. He/she will develop a deep understanding of all facts involved in the voting system through SMS, as what are the benefits of this system and how will this system overcome the problems of the previous one. Researcher will develop a problem statement by which he/she told about the benefits of the electoral system through SMS, then will assess the problem with participants as from voters who have casted voted vote by First past the post and also by biometric system about the difference of both systems and benefits of anyone, which system is better for the participants. Here the problem statement is a voting system through SMS and participants are voters of that area for them the process is going to develop. (Neumen)

4.2 Information:

Information sphere or information-gaining process is the second and most important aspect of reaching the access ladder. The facts which are provided by some person, some organization or some activity about something or someone falls into the category of information. In the access ladder, to reach at the destination the knowledge what the researcher is getting about facts in detail by someone or something is an information sphere. Following facts can lead towards a perfect information sphere, as it should be given in a context which clearly defines its meaning and relevance in content, should have an organized and specific purpose, can lead to decrease uncertainty and increase understanding of the researcher. To find out the resemblance and quality of some factors, the researcher looks into past work by which he/she can relate his/her work in a quality prescribed manner. It is also is known as the evaluative report found by a researcher in an information sphere, which may

have or have not resemblance to researcher's selected area of study. The researchers gathered data about some fact in a systematic fashion and then organize this data on the basis of information and data gathering analysis to find out answers for his/her relevant and evaluative outcomes, this process is known as data collection. (Neumen)

4.2.1 Implementation of Information on the voting system through SMS:

The researcher collected his/her data from past written work, articles, newspaper about electoral system of Pakistan whether First past the post system or biometric system, this collected information fall into the category of the literature review. Data is also collected by Election Commission of Pakistan, NADRA and by cellular phone companies. Election Commission can provide data about the registered voters of that specific area, NADRA provides data about the personal well-being of that voter who is going to cast a vote, and by cellular phone companies who provide data in the form of the registered phone number of the voter by which voter will be able to cast vote. (Neumen)

4.3 Observer:

Something which is noticing or watching by someone, the person who is doing this is an observer. There are persons who have command on their specific field, and the person who gets command in his/her field by seeing, watching, paying special attention to that fact is an observer. For example in a university there held a function or ceremony in a department or a reunion function in which all teachers and old students are invited to attend this party to meet with their older ones or to revive their memories. There must be a person in the party who will observe the party that whether the party arrangements are good or poor, whether there comes a change in students after entering in practical life. All these common things can be observed by paying attention. (Neumen)

4.3.1 Implementation of Observer on the voting system through SMS:

In problem statement of the researcher, all observers are passive because this system of voting through SMS is not implemented until now, so there is no question of an active observer. The researcher can get information from them by the previous method of voting, so after analyzing the different opinions of these observers, the researcher will be able to layout the important basic qualities of that new system. Without the implementation of this system, the researcher has no point to discuss it as an active observer, so the researcher and participants of the research all are included in the category of passive observer. (Neumen)

4.4 Revealing Facts:

Revealing facts are such kind of information which is gathered after the collection of data. In which researcher's own literature review plays an important role. The researcher can get revealing facts by Questionnaire which plays an important role in revealing fact procedure as it is the data gaining way produced by researcher own according to his/her topic and convenience to reveal facts about something or some issue from people and develop questionnaire in such a way to gain much more information from respondents. Focus Group Discussion (FGD) held by the researcher to disclose some points or facts about the issue on which researcher is seeking answers, and researcher does this for his/her convenience to reveal much more facts and to gain more answers from respondents whether in case of interviews or focus group discussion. Case Studies, for the convenience of the researcher, he/she may go to some specific area to disclose the real position of that area or that area's people about some issue. (Neumen)

4.4.1 Implementation of Revealing Facts on the voting system through SMS

Implementation of Revealing Facts on voting system through SMS, Revealing facts can have implementation on voting system through SMS because after collecting data researcher for his/her own convenience can develop a questionnaire to know about the views of people about that system or can have focus group discussion of NADRA, Election commission of Pakistan and phone companies to know about the factual position of that system whether it will work or not. (Neumen)

4.5 Grounded theory:

Construction of any theory which involves the analysis of data and mostly begins with a question, whether qualitative or quantitative and researcher who involves in a research process reviews and analyses the collected data by existing facts and theories to made all concepts about the facts apparent. After the analyses of data codes generated and these codes grouped into concepts and then further into categories. These codes, concepts, and categories lead towards the formation or construction of new theory by systematic methodology, and this methodology is known as Grounded Theory (GT). Applicability is the usefulness of something for a particular task. The thing which is given as applicable, to measure how useful is this given information in some particular task. To check the applicability of anything or tool in a research process, the procedure or tool given to apply in research is either applicable or not. Pros and cons that what are weaknesses or risk zones in any research process? To measure which tools the researcher is using, either they are perfect for that research or they have some vulnerabilities(Neumen).

4.5.1 Implementation of Grounded Theory on Voting System through SMS:

Grounded theory involves four major steps by which the researcher firstly gather or analyze the data by questions then form codes and grouped these codes into concepts, then further these concepts lead to the construction of a new theory. The researcher is seeking for the applicability of the problem statement, and in that case, the grounded theory is applicable in the researcher's problem statement. Grounded theory is an easy and accurate method to find out the results of the research, so it will be helpful in the electoral system through SMS. (Neumen)

5. Relationship and Functionality:

5.1 Relevancy of System Development Life Cycle (SDLC) with Researcher's Problem Statement of Voting through SMS:

System development life cycle has six phases with further sub-divisions and each, and every factor has some relation with the researcher's problem statement of the voting system through SMS. The problem statement of the researcher is to cast a vote through SMS, simply mean that voter should cast a vote by living into home or office through SMS and can have easy choices without any threat to cast a vote to their own chosen candidate. According to the first phase of SDLC, planning, and requirement gathering analysis, researcher's problem statement to cast a vote by SMS has relevant implementation by saying that before starting any procedure there needs to do plan and require some facts which need to help for further planning. There need to identify the risk factors which will exist during the procedural process of the voting system through SMS, and to assure the quality of the procedure. In case of requirement analysis, the researcher needs to analyze the requirement gatherings related to information of vote and facts about this process. While as about second phase of system development life cycle, designing and defining requirements, here came the stage to design the project, as in case of researcher's example of voting system through SMS, designing of any module can be done by using some methods, as first of all there is a need to collect the user requirement, for example where the system designing is going to implement? What are the requirements of the user? Then need to define the existing system and evaluate it with the new method. In the end, need to define a logical system. In this phase, there is a need to define the deficiencies of the old or existing system and describe new methods to improve the existing one. In the phase of designing, NADRA, cellular phone companies and voter itself will design their gathered information to Election Commission of Pakistan and how will they help to define the requirements of the voting system through SMS. Then step came to develop the architecture of the project as which steps and processes will involve into the voting system through SMS and which type of tools will be used in this process. To develop or build the project implementation, the researcher needs some hypothetical approaches which are going to apply on the whole process of the voting system through SMS, need to assess the deficiencies of the old system and new which is going to implement or on which the researcher is working. Layout the main characteristics and good/positive features of voting through SMS, by giving its whole procedure, benefits, security issues and then develop a new system of voting through SMS. As many women are not allowed to go outside to cast a vote, but by SMS voting system it can be easier for women to cast a vote by living within four walls of the home. All this procedure depends upon the ECP, NADRA and cellular phone companies as how they all develop the procedure of voting by collecting data from voters and develop a comfort zone for the voter to cast a vote. In the case of

development, testing or deployment, testing of the product depends upon the user. As talked earlier that even after testing only a small fraction of developed product should be released so in order to avoid problems.

5.2 Relevancy of Access Ladder with Researcher's Problem statement of the voting system through SMS:

Access ladder has five phases which have different sub factors, and every factor has relation with the researcher's problem statement of voting system through SMS, researcher need to assess the issues of the election commission of Pakistan, NADRA and cellular phone companies from which data will be gathered about voter and assess the whole procedure of voting system through SMS. In assessment, the researcher is going to apply own problem statement of voting system through SMS, as what are the problems in previous system of voting as in First past the post, where voter cast vote by going into polling station, but in this system researcher will cast a vote by sitting into home, office or any place from where the voter cannot cast vote. Here the participants are Election commission of Pakistan, NADRA and cellular phone companies. The second phase of access ladder is information where the researcher will gather data about the problem statement of the voting system through SMS and will gather data from the literature review of previous work and from the data collected by researcher itself either in the form of questionnaire or interviews. Information plays an important role and has positive or negative effects on this process, so it is the duty of voter to give correct information to the election commission of Pakistan and to NADRA. While in phase of observer, Election commission of Pakistan is playing the role of active observer and voter itself and NADRA is passive observer, and in that case NADRA will collect information of voter from voter itself and from that Phone Company by which voter registered his/her phone number and through which he/she will cast vote. In case of revealing facts, there are four major factors which play an important role in the problem statement of the researcher as a voting system through SMS, and these factors are a questionnaire, focus group discussion, case studies, and researcher's own literature review. Revealing facts are such kind of information which is gathered after the collection of data. In which researcher's own literature review plays an important role. Revealing facts can have implementation on voting system through SMS because after collecting data researcher for his/her own convenience can develop a questionnaire to know about the views of people about that system or can have focus group discussion of NADRA, Election commission of Pakistan and phone companies to know about the factual position of that system whether it will work or not. Construction of any theory which involves the analysis of data and mostly begins

With a question, whether qualitative or quantitative and researcher who involves in a research process reviews and analyses the collected data by existing facts and theories to made all concepts about the facts apparent. After the analyses of data codes generated and these codes grouped into concepts and then further into categories. These codes, concepts, and categories lead towards the formation or construction of new theory by systematic methodology, and this methodology is known as Grounded Theory (GT). Grounded theory involves four stages to construct a new theory by existing and by identifying key points. The researcher is seeking for the applicability of the problem statement, and in that case, the grounded theory is applicable in the researcher's problem statement. Grounded theory is an easy and accurate method to find out the results of the research, so it will be helpful in the electoral system through SMS.

SDLC Phases	Assessment	Information	Observer	Revealing Facts	Grounded Theory
Planning and Requirement Gathering Analysis	✓	✓	✓	✓	✓
Designing/Defining Requirements	✓	✓	✗	✓	✓
Developing the Product Architecture	✗	✓	✗	✓	✓
Building or Developing the Product/Implementation	✗	✗	✗	✓	✓
Integration/Testing the Product	✗	✗	✗	✗	✓
Development and Maintenance	✗	✗	✗	✗	✓

Table. 1 Relationship between stages of SDLC and Access Ladder

Access ladder has five phases; the first phase is Assessment with two subfactors as problem statement and participants. Researcher's problem statement was to conduct elections through SMS, as a source to gain transparency, high turnout, security protection, and economic issues. Here there are three participants, first is Election commission of Pakistan, second is NADRA, and last is cellular phone companies by whom the voter will register his/her Sim card to cast a vote.

SDLC Phases	Assessment	Problem Statement	Participants
Planning and Requirement Gathering Analysis	✓	✓	✓
Designing/Defining Requirements	✓	✓	✓
Developing the Product Architecture	✗	✗	✓
Building or Developing the Product/Implementation	✗	✗	✓
Integration/Testing the Product	✗	✗	✓
Development and Maintenance	✗	✗	✓

Table. 2 Relationship between stages of SDLC and factor 1 of Access Ladder

The second phase of access ladder is Information, in which the researcher will gather information by a literature review of previous work on which other authors have worked earlier and researcher will gather that literature review to make a clear direction and will collect data as by means of questionnaire or other convenient sources of the researcher. Accurate information provided to researcher play an important role in the whole process of research. So information should be accurate for the transparent process.

SDLC Phases	Information	Literature Review	Data Collected
Planning and Requirement Gathering Analysis	✓	✓	✓
Designing/Defining Requirements	✓	✓	✓
Developing the Product Architecture	✓	✓	✓
Building or Developing the Product/Implementation	✗	✓	✓
Integration/Testing the Product	✗	✗	✓
Development and Maintenance	✗	✓	✓

Table. 3 The relationship between stages of SDLC and factor 2 of Access Ladder

Next phase Observer falls into the category of the third phase of the access ladder in which two factors rely as an active observer and passive observer. The Election commission of Pakistan is going to play the role of an active observer. Voter and NADRA are the parts of passive observer. This process has no implementation yet so the

procedure till is playing the role of passive observer. Election commission of Pakistan will control the whole process by giving instructions to NADRA and cellular phone companies to gather data and to gather information of voter.

SDLC Phases	Observer	Active Observer	Passive Observer
Planning and Requirement Gathering Analysis	✓	✗	✓
Designing/Defining Requirements	✗	✗	✓
Developing the Product Architecture	✗	✗	✓
Building or Developing the Product/Implementation	✗	✗	✓
Integration/Testing the Product	✗	✗	✓
Development and Maintenance	✗	✗	✓

Table. 4 Relationship between stages of SDLC and factor 3 of Access Ladder

Revealing facts are considered as the fourth phase of the access ladder which have four subfactors as questionnaire, case studies, focus group discussions and researcher's own literature review. Researcher's problem statement is voting system or elections through SMS, and to reveal problems of researcher's problem statement are different and different ways to reveal or gather information about researcher's problem statement. First past the post was the previous system of elections by which voter cast vote by going into polling station and have had many problems, then biometric system came and that was implemented in a city of Pakistan but its results were not fruitful, so this system of elections through SMS is quite different way with many benefits for the voter.

SDLC Phases	Revealing Facts	Questionnaire	Focus Group Discussion	Case Studies
Planning and Requirement Gathering Analysis	✓	✓	✓	✓
Designing/Defining Requirements	✓	✓	✓	✓
Developing the Product Architecture	✓	✓	✓	✓
Building or Developing the Product/Implementation	✓	✓	✓	✓
Integration/Testing the Product	✗	✗	✗	✗
Development and Maintenance	✗	✗	✗	✗

Table. 5 The relationship between stages of SDLC and factor 4 of Access Ladder

Grounded theory has its applicability in researcher's problem statement of the voting system through SMS, by looking deeply into pros and cons of the whole system of election as what were the deficiencies of the previous system of voting through SMS, and what are the main features or benefits of the electoral system through SMS.

SDLC Phases	Grounded Theory	Applicability	Pros and cons
Planning and Requirement Gathering Analysis	✓	✓	✓
Designing/Defining Requirements	✓	✓	✓
Developing the Product Architecture	✓	✓	✓
Building or Developing the Product/Implementation	✓	✓	✓
Integration/Testing the Product	✓	✓	✓
Development and Maintenance	✓	✓	✓

Table. 6 Relationship between stages of SDLC and factor 5 of Access Ladder

6. Hierarchy chart of all methods of Elections Worldwide

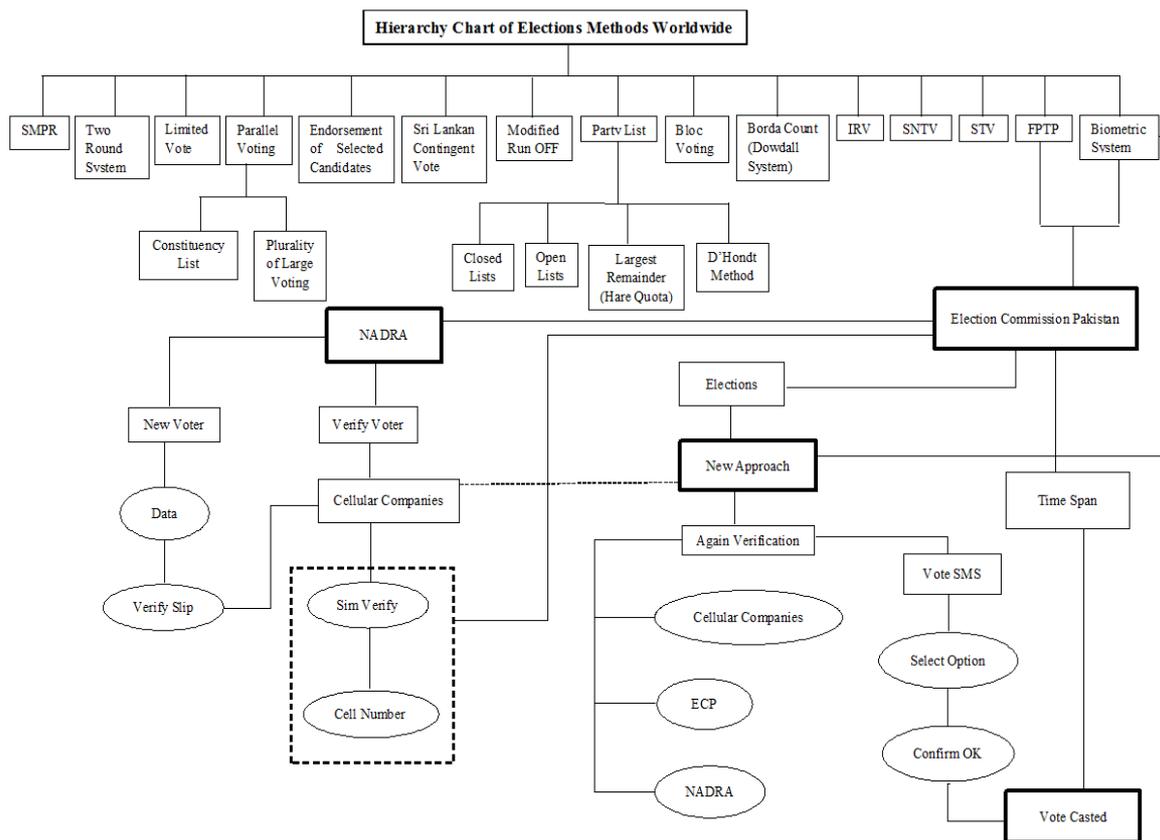


Fig 1. Road Map of Vote Casting through subform of Biometric System

There are fifteen methods of Elections conduction worldwide, the method for the conduction of the election which is now being used in Pakistan is First Past the Post (FPTP), but now in some areas of Pakistan biometric system of polling is introduced. Here the researcher is introducing the new approach Elections through SMS, in this system NADRA will verify the votes of existing voters then verify their Sims with cellular companies. For

new voters NADRA after collecting their data, issue them a verify slip, and that slip will be used by the voter to get Sim from any cellular company. NADRA will send the registered and verified cell numbers to ECP, and those cell numbers will make voters eligible to cast a vote. The second stage of this method will be upheld by ECP, at the time of Elections by using New approach a call could be made by ECP, Cellular companies or NADRA for again verification of voters before some days of polling. On the day of polling, a vote SMS send to the voter by ECP having the list of all candidates of that particular constituency. Voters will reply that SMS after choosing their desired candidates. ECP will send a confirmation SMS to voters that their vote is casted by using Electoral method through SMS verification. (Baig, 2011)

Conclusion

As many methods have yet been defined for conducting the elections all over the world, many methods are in exercise and as technology has enhanced the methods have modified themselves rapidly. One thing is to be mentioned that the human error regarding its physical involvement exists with a minimum of five to twenty-five percent. In Pakistan, the problems of rigging have always been a part, but now after a practice of biometrics, this technique can also be used for conducting the elections. A subtype of this technique is studied in this paper through which all the hassle can be exempted which is seen in the elections and the excess of a vast number of telecommunication devices in access to the people can be used for casting of votes in a very nominal procedure.

References

- Atta, A. (2015, August 17). *First time in Pakistan: ECP holds Election with biometric verification of voters*. Retrieved from Pro Pakistani.
- B. Habib and J. Akhtar. (2014). Computational representative techniques of Software Engineering for Social Sciences. *Pakistan Journal of Social Sciences*, 34(1), 111-120.
- B. Habib, J. Akhtar and A. Asghar. (2015). Analysis of Implementing E-Voting in the Electoral System of Pakistan. *Journal of the Research Society of Pakistan*, 2, 245-256.
- Baig, S. (2011). Electronic Voting using fingerprints matching with Gabor Filter. *International Bhurban Conference on Applied Science and Technology, Islamabad*. Bhurban.
- Biometric polling in Haripur by-Election, 54% impression unverified*. (2015, August 24). Retrieved from Dunia News.
- Biometric system technically unreliable, says ECP*. (2015, October 27). Retrieved from Dunia News.
- Capron, H. L. (2001). *Computer tools for an information age* (5 ed.). Welsley.
- Neumen, W. L. (n.d.). *Social Research Methods: Qualitative and Quantitative approaches* (7 ed.). University of Wisconsin at Whitewater.