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SURVEY ON FEASIBILITY STUDY OF SOFTWARE DEVELOPMENT PROJECT

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ABSTRACT

Investigating in advance that either the proposed software project is appropriate for organization or not and either all functional requirements can be successfully accomplish or not can be predicted using feasibility study. Software project development requires estimation of costs, time and schedule. The accuracy of these estimates matters a lot in software development otherwise project may leads to failure in case of poor cost and schedule estimates. Organization, communication and control are some major elements of feasibility study. Analysis of different methodologies and techniques are conducted and are presented in the paper.

Keywords: *Feasibility Study; Business Process Model; model-based verification; COCOMO II; WebCost, Risk Mitigation; Artificial Intelligence; Capital Asset Pricing Model ; Critical Success Factors.*

I. INTRODUCTION

Feasibility study is considered as an initial phase for investigating the project activities, resources and design. It can be referred as an initial phase of Software Development Life Cycle (SDLC). Feasibility study is conducted to ensure that the proposed project will accomplish all of the functional requirements and will work in organizational environment in better way before any implementation. The major aspects include analyzing the accurate cost estimates, risks estimates that assists in saving time, money and effort required. Several models such as Business Process Model (BPM) for performing early feasibility study and Stochastic Risk Model are presented. Project sponsors are responsible for approving it. COCOMO II, and risk mitigation using Rule Based Technique are also analyzed. Expert Judgment and managers also plays an important role in it and conducting this study develops motivation among the team members to complete project successfully. Feasibility study can be treated as project in itself in case of larger projects development which assists in planning how to meet the objectives of project and also encourage in managing the schedule of projects. Conducting economical, operational, and technical feasibility also plays major role in finalizing the project. Organization, communication and control are the major elements of feasibility study.

The section 2 of paper presents the literature review of several techniques, section 3 discusses analysis description and finally the conclusion drawn is presented.

II. LITERATURE REVIEW

2.1) *Significance of Conducting Feasibility Study (Teresa Luckey, † Joseph Phillips, 2006)*

Feasibility study being a vital phase of software projects development assists in saving time, money and identifying the risk factors. Business Consultant or Subject Matter Experts (SMEs) are considered for performing the feasibility study. The study ensures the objectivity, project requirement investigation, risk factors, cost estimates as well as the factors leading towards the software project failures and success during the project development. Conducting the feasibility study provides the motivation to the team to complete the project. Feasibility study requires certain models for estimation. One of the cost models is Constructive Cost Model (COCMO) which is obsolete now because its accuracy is limited. So COCOMO II introduced in 1995 replaced the COCOMO. Risk mitigation strategies must also need to be reviewed during this study to ensure that the decision taken for project is acceptable.

2.2) *Performing Early Feasibility Studies of Software Development Projects Using Business Process Models (Ayman A. Issa, Faisal A. Abu Rub, 2007)*

Business Process Model (BPM) is an improved feasibility study technique using the Activity Role Diagrams (RADs). It defines certain use cases that are helpful in estimating the costs before the implementation of software product.

Cost estimation techniques are critical for Software Development Life Cycle (SDLC). Their accuracy matters more in larger projects instead of smaller project. Factors that led to inaccuracy include handling with vague requirements and changing technologies. Constructive Cost MOdel II (COCOMO II) is used to improve the accuracy of cost estimation efforts.

BPM consist of one or more processes to examine, identify and improve automated and non-automated business processes. The paper aims to discuss the reliability of use cases generated by business processes and number of developed use cases utilized in SDLC.

RAD corresponds to the roles and interactions between the processes. RAD also includes abstraction notation of desired behavior and visual representation that helps in understandability. RAD model consist of role containing the activities, it also includes horizontal line for joining the roles and vertical lines for states of roles with small loop defining the labels

of the states. Symbolic Notation for RAD is shown in figure.

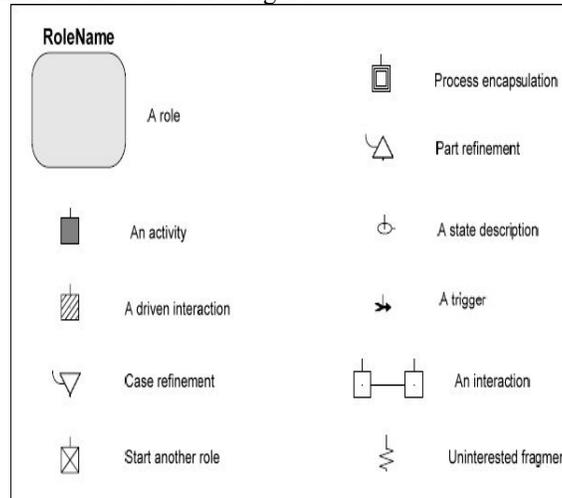


Figure 1: Activity Role Diagram Notations for Business Process Model [2]

There exists a relationship between use case models and business process.

Ayman A. Issa and Faisal A. Abu Rub [2] present the case study of cancer registration process. Feasibility study of software system using BPM includes the following steps:

1. Using Improved RAD notations, develop the BPM.
2. Then calculate total number of use cases by using the formula [2]:

$$\text{Number of Candidate Use Cases Per BPM} = \left[\frac{\text{Number of Transactions per BPM}}{\text{Average Number of Interactions per Use Case}} \right]$$

3. Calculate Total Effort required for development by using formula introduced in [2]

$$\text{Effort} = \text{Total Number of Candidate Use Cases} \times \text{Average Effort per Use Case}$$

4. Use the results of total number of use cases and required Total Effort from step 2 and step 3 with other project parameters to perform feasibility study.

2.3) Evaluating the Use of Model-based Requirements Verification Method: A Feasibility Study (Daniel Aceituna, Hyunsook Do, Gursimran Singh Walia, Seok-Won Lee, 2011)

Requirement engineering is a critical phase of SDLC to develop reliable software. As the Natural Language (NL) is used for requirements representation so it led to faults and is a challenging task. The paper [3] presents Natural Language to State Transition Diagram (NLtoSTD) method for improving quality of requirements by transforming NL requirements to STD. NLtoSTD method is more effective than fault checklist method as it helps in identifying missing, ambiguous and inconsistent requirements. Three elements required for forming STD Building Block (STD-BB) includes current state, transition and next state {Sc, T, Sn} for attaining traceability between STD and NL. For

instance, three elements are {Sc: moving forward, T: applying brakes, Sn: Stop} in the requirement “The driver shall be able to stop the car by applying brake while car is moving forward”. STD-BB uses question marks (???) notation for elements not specified explicitly.

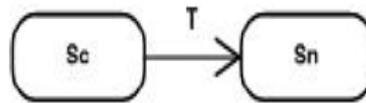


Figure 2: Elements of State Transition Diagram Building Block for Requirements Verification [3]

The usefulness of NLtoSTD is evaluated based on eight attributes: simplicity, understandability, comprehensiveness, intuitiveness, ease of classifying faults, usability, uniformity across products, and adequacy of faults found. The fault types focused by fault checklist includes: Missing Functionality (MF), Missing Environment (ME), Ambiguous Information (AI), Inconsistent Information (II), Incorrect Fact (IF), Extraneous (E), and Miscellaneous (M) and NLtoSTD includes inspecting the Ambiguous Information (AI) and Missing functionalities (MF).

2.4) An Approach to Software Project Feasibility Study Using Stochastic Risk Model during Proposal Preparation (Anton Khritankov , 2009)

Estimating the project cost and expected profit of project before its implementation phase develops an assurance about the project success. Anton Khritankov [4] discussed the stochastic approach for estimating the risk factors of project. Probabilistic risk estimation model and pricing model are considered as an important concept.

The probabilistic risk model is defined in way that X be a value representing total effort of project whose sum is $X=T+R$. T represents the total effort without risks whereas R shows total effort required to overcome risks (variable T and R are stochastically independent). The improvements of stochastic risk model are discussed which requires:

1. Independent risk models
2. Uses arbitrary risk profiles
3. Models uncertainty in effort estimates of risk free project
4. Define risk scope and development of risk registers

Three types of pricing models are specified: Fixed Price model, Time-and-Material (T&M) model, and Total Risk Identification and Mitigation (TRIM) model. Fixed Price model also called lump sum model is mostly suitable for project with low risk and customer pays the project cost without concerning how much the contractor pays their employers. Developer estimates the total effort and profit of project before signing the contract. In T&M model, customer has to pay according to the effort or work performed by the employers of contractor. TRIM model is considered suitable as it shares possible profit from actual project cost reduction and costs of associated materialized risks between buyer and seller. Method required for feasibility study requires project description and risk registers at first and following procedure will be followed:

1. Estimation of project effort without considering risks. It may be calculated using Function point Analysis (FPA) or Work Breakdown Structure (WBS)
2. Using Risk Register, identify the risks associated with the proposed project
3. Amendment of risk profiles if mandatory or required
4. Prepare project profile $FX(x)$ from estimated project efforts and risks
5. Specify project profile $FX(x)$ to pricing model
6. Select the model that provides higher probability of success and present it to customer
7. Else, adjust values of pricing parameters or revise schedule or WBS.

2.5) E-Cost Estimation Using Expert Judgment and COCOMO II (Zulkefli B i n Mansor, Zarinah Mohd Kasirun, Noor Habibah Hj Arshad, Saadiah Yahya , 2010)

Software project development requires estimation of costs, time, risks, schedule and resources associated with project. The accuracy of these estimates matters a lot in software development otherwise project may leads to failure in case of poor cost and schedule estimates. The paper introduces the implementation of COCOMO II model and WebCost tool in which input values from expert judgment are taken. Boehm' s COCOMO, COCOMO II, Putnam ' s SLIM and Albrecht's Function Points are among the most famous cost estimation techniques. COCOMO II provides reusability approaches, and focus on large as well as smaller projects. Models supported by COCOMO II include: Application Composition model, detailed Early Design and Post-Architecture models. There exist many of the cost estimation tools but all of them have limitations. WebCost tool presented in the paper [5] uses variables of

COCOMO II it offers more accurate results of cost estimation especially when experts provide an input to the variables as they have more experience and knowledge of previous projects. User evaluation and comparison of WebCost with other tools is performed to ensure the validity of estimation results carried out by WebCost tool.

2.6) Software Risk Factors: A Survey and Software Risk Mitigation Intelligent Decision Network Using Rule Based Technique (M. Asif, Jamil Ahmed, A. Hannan, 2014)

Risk factors and risk mitigation are gathered for development of intelligent risk mitigation network using Rule Based System (RBS). RBS has three main components: A Rule Bases Engine, A Knowledge Base (KB) and Working Memory (WM). Risk factors and software risk mitigation gathered are considered as rules and entered in KB. The system works in a way that risk factors are considered as inputs. KB contains relationship in form of risk factors and risk mitigation. Rules for input risk factors are first checked inside the KB. If rules exist then risk mitigation network will be generated but if rules are not found inside KB then the system requires following steps to be followed:

1. Based on relationship between risk factors and risk mitigation; prioritize risk factors
2. Create new relationships of risk factors with risk mitigation
3. Add the new relationships as rules into Knowledge Base
4. Then RBS execute these relationships
5. Finally intelligent risk mitigation network is developed

Feasibility study refers to Strength, Weakness, Opportunity, and Threats i.e. SWOT analysis and leads to successful project. The risk factors presented [6] needs to be considered to reduce the chances of software failure.

2.7) Feasibility Study for Information System Projects (Pavadee Katimuneetorn, 2008)

Feasibility study during Software Development Life Cycle (SDLC) focuses on the economic feasibility, cost, risk and financial technique analysis. The paper [7] presents feasibility factors: technical, operational, scheduling, legal and contractual, and political feasibility. The study helps in predicting whether the proposed project will be successful or not before its implementation phase. Estimation is the main part of feasibility study and it requires time, requirements, resources (cost, labor, materials, infrastructure), and risks as essential variables. Underestimating or overestimating both results in failure of project. Estimates can be divided into three categories: Fair estimates, Rough estimates and Ballpark or order of magnitude. Fair estimates are suitable for familiar projects; Rough estimates are suitable when domain and technology of projects are known. Ballpark or order of magnitude is an estimation technique suitable for new projects. In this technique project is divided into different tasks; size and complexity are considered as two major factors for evaluating these tasks. Define time and resources for each combination and add all values of each task to predict time and resources. Two basic cost estimation approaches including top-down and bottom-up are presented. Net Present Value (NPV) and Internal Rate of Return (IRR) are among the economic evaluation methods. Break Even Analysis for cost benefit analysis is discussed. Technical feasibility is conducted to determine that whether the organization has potential to build the proposed system and whether the required technologies exist or not. Operational feasibility involves analyzing that system will be adopted by end users and works to solve the business problems. Legal and Contractual Feasibility also be performed in an initial stage of project development in order to avoid legal issues that may occur after the completion of project in form of illegal requirements.

2.8) Feasibility Study Inputs based on Requirements Engineering (Robert Pergl, 2010)

Feasibility study requires determining implementation alternatives; assess economic feasibility, technical feasibility, and operational feasibility and finally choose alternative. Feasibility study needs requirement analysis as input parameters. Requirements-Feasibility Study Transformation (RFST) involves following attributes: structured, recordable, evaluation accuracy and traceability. The method for transformation is presented in the paper [8] which

is based on analogy between system theory and software project. System requires inputs, outputs, inner elements, and relations. Software project management requires inner elements, relations between inner elements, and relations from inside to outside. The method involves definition, inputs and project factors selection. Completeness, independence, and minimalism are the attributes required. Evaluation of inputs needs to be performed and consist of following steps: Requirements gathering and structuring, requirements analysis, difference function, substitution functions and total substitutions evaluation, resulting differences evaluation and finally the results are interpreted.

2.9) Study the Feasibility and Importance of Software Testing: An Analysis (Dr. S.S.R. Ahmed, 2009)

Software testing is more important element in maintaining the software quality. Defect detection and reliability estimation are the main reasons of software testing. In reliability estimations there might be flaws in inputs. There are different methodologies for testing software by debugging, by taking a small piece of code or by mapping it with requirements. For execution of any test activity we first need to plan and then create a document containing scope, approaches, schedules and test items (this document called test plan). Verification and Validation (V & V) model is use for development testing and it include set of activities for checking that software is correctly working according to user requirement. The two main approaches for software testing is White Box testing and Black Box Testing. White Box Testing is performed to execute code under different inputs in order to confirm that irregular behavior not occurs. It is fact that White Box testing is very effective than Black box testing because it checks the flaws in each classes. It also help in systems which are time sensitive as it takes less time and give less effect in execution. Fault assertion, Test coverage and Assertions are the important techniques of white box testing for ensuring the quality. Black box Testing is closed box testing usually focus on the system specifications. It checks the input and output (observed, expected), no matters what the code is. Software strategy include test Vee model.

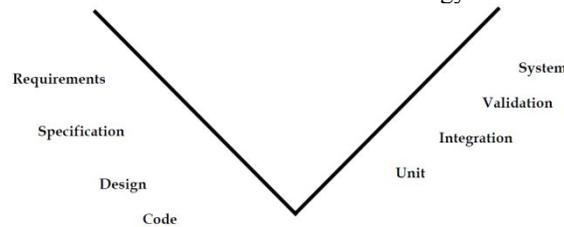


Figure 3: Test Vee Model [9]

Left side indicates steps of Software Development Life Cycle (SDLC) and right side indicate the action for testing. Testing techniques is very important for business success by reliability estimation, time affection and understanding risk. It not only examines the code but also tell what it needs to do.

2.10) Predicting Performance of Software Systems during Feasibility Study of Software Project Management (Kumar, Kanth, K.R, 2007)

Performance matters a lot in software project. Many researchers predict the performance without collecting the data in feasibility study. Only the few researchers find the performance issue during Software Development Life Cycle (SDLC) phase and mostly find it after coding phase. Both user and tester point of view is matter in software performance. Different evaluation techniques are used for performance: Performance metrics in SDLC, SPE (Software Process Engineering) in Analysis phase and Modeling Software System by using UML diagrams. In this research, use the algorithm for predicting the technical and environmental factor of performance using the data of feasibility study. SPE can by use by calculating effort through use case points. In this method total effort is calculated by LOC (Line of code) in assembler, hardware device requirement throughput, residence time, queue length, device utilization and response time by software executing model. This effort will assign a number from 0 to 5. Here we are calculating effort of cost estimation. After analyzing with the algorithms it is observed that when technical factors has greater and environmental factor has low estimated value then response time is high. During feasibility study we predict the high performance factor.

2.11) Software Projects Finance Support: Preliminary talks between Software project managers and potential investors (Uzal R., Debnath, N., Riesco, D., Montejano, 2009)

Software project has very risky deal. This paper presents scheme proposal in software project by discussion with the investors. It contains techniques, languages, models which a software engineer must use while talking with financial

supporter (it depends on supporter thinking). One technique is the portfolio model which presented by Harry. In this method, it depends on investor behavior and software engineer and manager should interact with him. Expected decision will be based on level of expected result and risk. Efficient portfolios or business have higher expected result and less risk. The efficient frontier discussed [11], made up of the portfolio which offer minimum risk in give level of return. For the different criteria there must be different combination of portfolio. In risk free asset we can estimation another combination of portfolio. Estimation of portfolio was discussed by Roberto Uzal [11]. Capital Asset Pricing Model (CAPM) is the efficient portfolio of risky model. It includes different assumption but it also includes some limitations. There must be improvement in the conversation of project manager and finance manager.

2.12) Software Process Models and Analysis on Failure of Software Development Projects (K. Rupinder, Dr. J. Sengupta, 2011)

Failure in software development project is due to the inconvenient software process model and feasibility study. Software Process Model is actually the core of project which has different set of activities. There are many software models proposed for obtaining efficiency in Projects. This research is about how the software fails and different proposed models. Process Model describes the lifecycle of project, its starting point, states, operations and the ending point. Models are use to manage time, cost, resources and requirements. According to the success criteria different model has been proposed like Waterfall, Iterated, Spiral and Prototyping model. The selection of model will depend upon the software requirement. If domain having changing requirement use iterative approach and if the project is short and static use the waterfall approach. All models are due to decrease risk and increase speed and efficiency. When the requirements don't meet with user satisfaction level or cost over runs or timing constraint not fulfill then it lead to the software failure. According to the research of Dan Galorath [12], the research on the software failure shows this result.

	1994	1996	1998	2000	2002	2004	2009
Succeeded	16%	27%	26%	28%	34%	29%	32%
Failed	31%	40%	28%	23%	15%	18%	24%
Challenged	53%	33%	46%	49%	51%	53%	44%

Figure 4: Software Failure Ratio in Software process Models [12]

According to that research the three main factors which effect the project failure is time, budget and needed work. Few projects meet this level. But besides these three factors some other are also play important role: Extracting Requirements, Lack of user requiremen, Team size, Time dimension, Fix Controller, Testing and Poor Quality Management [12]. With all these approaches software may not be fully successful. It shows that there should be another approach to cover up the flaws in the project.

2.13) Critical Success Factors of Information Technology Projects (Md. A. Imtiaz, Md. T. Mirhashemi, R. Ibrahim, 2013)

IT projects plays an important role in the advancement of business. Researcher found that there are number of project failures in IT projects. In this paper, different factors discussed which mainly involve in project failure and these are called CSF (Critical Success Factors). Research on CSF started on 1980's that what the parameters for achieving the business successful criteria. With the strong research, there are 15 CSF factors for the success in IT projects. There must be support of Top Management. Leader ship is the basic requirement of successful project. Leader should have technical skills and good background in the project field. There must be cooperation with the team members. The important requirement is that you are clear about the goal that what you want to achieve and how it is possible to achieve. Team should be capable of doing tasks. Important factor is the Feasibility study, it should be so strong that budget, cost and resources should be enough for making the project successful (Financial Support). Communication factor, Risk management, Training of Employee and selecting a right team which have all the capability are involved in CSF factors. By research it is shown that by adding these 15 factors in CSF, Project successful rate is increased in IT field.

		STUDIES AND FACTORS											
S	F	[10]	[7]	[6]	[11]	[3]	[5]	[4]	[9]	[8]	[12]	T	
TMS		✓	✓	✓		✓	✓	✓	✓	✓		8	
LD		✓	✓	✓		✓		✓				5	
TM		✓	✓	✓		✓						4	
CG		✓	✓	✓	✓	✓		✓		✓		7	
TC		✓	✓	✓		✓		✓	✓	✓		7	
BS		✓				✓		✓				3	
EC		✓	✓	✓	✓	✓		✓				6	
PQ		✓									✓	2	
TR			✓			✓		✓				3	
PPS		✓									✓	2	
C/UI		✓	✓	✓			✓	✓	✓	✓		7	
RM				✓	✓			✓				3	
EMC		✓			✓			✓				4	
AR			✓	✓	✓				✓	✓		5	
SRT		✓		✓							✓	3	

Figure 5: 15 CSF Factors in IT Projects [13]

2.14) The Feasibility Study and Cost Benefit Analysis (K. Jessica, 2002)

Feasibility study is actually used to check that the project is practical or impractical. The deliverable of feasibility study is the report which are given to steering committee that whether the project succeed or not. A feasibility study should include following parts: Description of system, needs, Cost benefit analysis and estimation of schedule and reports. There are 3 categories of feasibility: Financial feasibility, Technical feasibility and Operational feasibility. Financial feasibility is that the budget is feasible for proposed project. It should be enough to complete a successful software project. It not include budget but also deal with time and resource management. Technical feasibility is that how much the project is easy to develop, do they have previous technical detail, technical staff available for it, whether the proposed system meet the mentioned requirements. Operational feasibility is that the project should be operationally correct and accepted by the organization. There is no resistance in the project. All the staff members should agree with the project requirement and there is some previous information regarding the project. One of the major issues in the feasibility study is the cost benefit analysis. This study is for the checking that the estimated cost should not increase with the benefit of project. Analysis technique was discussed by Jessica [14]. With the research, it is found that the schedule of feasibility study tasks are as follows:

Feasibility Study Tasks	Detailed Activity	Weeks Required
Data gathering	Conduct interviews	3
	Administer questionnaires	4
	Read company reports	4
	Introduce prototype	5
	Observe reactions to prototype	3
Data flow and decision analysis	Analyze data flow	8
Proposal preparation	Perform cost/benefit analysis	3
	Prepare proposal	2
	Present proposal	2

Figure 6: Schedule of Feasibility Study [14]

2.15) The Feasibility Study (M. Chemuturi, T. M. Cagley, 2010)

Feasibility Study is the major part of software development system. It is used to study the existing system by system analyst or business analyst. Feasibility study helps to elicit the user requirement and Technology requirement (new programming language, databases, and tools). It also helps to select the software development approach (Use COTS (commercial off-the-shelf) or start from scratch). Tell whether the software will be executed (in-house or outsourced). There is also tangible and intangible benefit of feasibility study. Estimation in the feasibility study will

base on Cost of hardware, software systems, data files, training resources and other relevant files. Report of feasibility study contains Title, Content, Project description, Benefits, Cost Estimation, Technology, Implementation strategy and Appendices. It is submitted to the manager. The approving authority is the senior manager of committee. If the approval receives then we will move toward the project proposal.

III. ANALYSIS

The paper analyzes the feasibility study as preliminary phase for software project development during which goals of the project are identified. All the issues and possible solutions in terms of cost, risks and time are discussed. The study also investigates the factors leading towards the software project failures and success before the project development which motivates team to complete the project. BPM [2] is introduced as an improved feasibility study technique and NLtoSTD [3] method is presented for requirements identification. Stochastic approach [4] and Rule Based Technique [6] are introduced for estimating the risk factors of project and COCOMO II and expert judgment methods are used for estimating the costs. They help in estimating the accuracy of costs and risk estimates that otherwise may leads to failure in case of poor costs and schedule estimates. Feasibility study refers to SWOT analysis which comprises of Strength, Weakness, Opportunity, Threats and leads to successful project. The paper [7] presents feasibility factors that include technical, operational, scheduling, legal and contractual, and political feasibility. Feasibility study requires requirement analysis as input parameters. Better approach before developing any project is to conduct its economic feasibility, technical feasibility, and operational feasibility and finally choose an alternative in order to predict whether the proposed project will be successful or not. The paper [8] include Verification and validation model for testing so that the requirements are mapped to requirements and testing and there will be less chance of failure. The paper [9] predicts the performance of software during SDLC phase to make feasibility study. The paper [10] presents the communication gap which cause failure in the software project and should be recover during feasibility study. The paper [11] presents the inconvenient process model techniques. The paper [12] presents 15 CSF which must be kept in mind while making software. The study from book [13] represent about cost analysis. The next study [14] presents the introduction of feasibility study. What are the methods of writing feasibility report?

IV. CONCLUSION

Feasibility study is considered as an important phase of SDLC in terms of saving time, cost, and activity scheduling and risk mitigation and sometimes can be considered as a separate project in larger project development. The accuracy of costs and risks estimates matters a lot in larger projects development. In this paper we have discussed purpose, significance and benefits of conducting feasibility study as preliminary stage. Various techniques like cost estimation, risk models are presented. Focus of conducting this study is on the economic feasibility, cost, risk and financial technique analysis. Several kinds of estimates: Fair estimates, Rough estimates and Ballpark or order of magnitude are under consideration. Some people believe it as wastage of time and resources but in fact the study helps in investigating the demand of project, its scope and planning.

In a nutshell, we can state that feasibility study is conducted to identify three main aspects: scope of project, purpose and planning i.e. what is scope or objective of developing the project? What is the need of project; either it should be developed or not? And lastly how can we accomplish goals. As a result it helps in analyzing whether the project is feasible or not before initiation of any project.

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TABLE 1: TECHNIQUES FOR CONDUCTING FEASIBILITY STUDY

S#	Techniques	Formulas	Case Study	Merits	Demerits
1	Feasibility Study Using Business Process Models[2]	$\text{Number of Candidate Use Cases Per BPM} = \left[\frac{\text{Number of Transactions per BPM}}{\text{Average Number of Interactions per Use Case}} \right]$ $\text{Effort} = \text{Total Number of Candidate Use Cases} \times \text{Average Effort per Use Case}$	Cancer Registration in Jordan	Approach shows ease and timeliness	Not Specified
2	Model-based Requirements Verification Method [3]	Three elements: {Sc, T, Sn}	Battery control system in a cell phone	Exposes incomplete and ambiguous requirements	Certain validity threats not discussed. Artifacts developed by student team not professionals

3	Stochastic Risk Model [4]	$X=T+R$ X: Total Effort to implement project T: Total effort without risks R: Total effort to implement the	Telephone sales Agents Tool used is:	Evaluate project success before implementation, revise project schedule or Work Breakdown Structure (WBS) And also presents pricing options to customers using pricing models	Not specified
4	E-Cost Estimation Using Expert Judgment and COCOMO II [5]	Not Specified but uses parameters of COCOMO II model	Comparative study with different tools and estimation techniques .	COCOMO II provides more reusability approaches, WebCost tool is used which provide more accurate cost estimation results because expert judgment is involved	Not Specified
5	Risk Mitigation Intelligent Decision Network Using Rule Based Technique [6]	Not specified	Exploratory survey among 100 university students and 100 IT professionals to prioritize software risk factors	Helpful for project managers in making decision, and definitely help in reducing the failure rate	Not Specified

DATA FLOW OF FEASIBILITY STUDY

Feasibility Study is conducted to ensure that the project will be suitable and appropriate for organization and will meet out the business needs. The paper presents the following techniques presented in the Data Flow Diagram which can be used to estimate the requirements gathering, cost estimation, risk factors, performance prediction, finance support and project success and failure prediction.

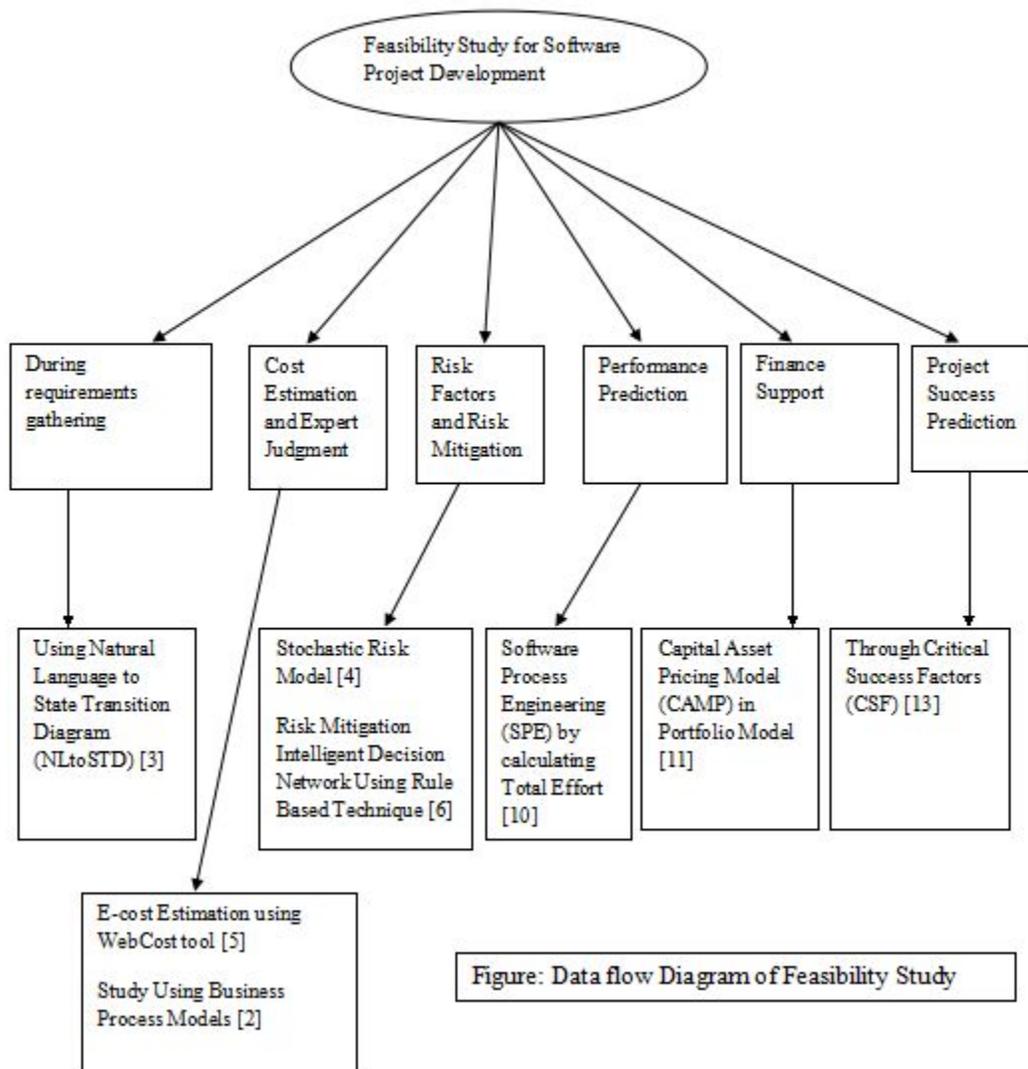


Figure: Data flow Diagram of Feasibility Study