An Innovative Approach for Risk Identification and Management in Software Projects

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Abstract— Risk is a potential issue that may trade off the achievement of a product advancement venture. The success of a project is altogether impacted by the risk management. The exactness of risk assessment specifically impacts the adequacy of risk management. In this paper, we examine the chance components. The Risk-matrix has been inspected and a checklist is made to perceive the significance of the risk .This paper deals with the risk factors identified with risk estimation ,risk analysis, venture board, risk scope, prerequisites and hazard factors identified with client fulfilment .Here we are adopting a method which consists of 2 phases. The first one is the risk identification and second is the risk management planning. Identification of the risk involves analytical methods like a risk checklist which evaluates the risk and risk assessment matrix. In risk checklist the probability of occurrences is taken and the possible negative effects for each risk is identified. Management of the risk involves various measures to be adopted to reduce the probability of risk events and to reduce the negative impacts of the risk events**.**

Keywords—*software risks, risk management, risk classification, risk impact, risk identification, risk assessment, risk mitigation*

I.   INTRODUCTION

Programming engineers are worried about the greater part of the segments related with the product improvement process. They work over different stages and advancement dialects to make the product that end clients will utilize everywhere throughout the world. Their work incorporates exploring, planning, actualizing, and testing programming. Risk is a potential issue that may trade off the achievement of a product advancement venture[1]. Hazard administration is a basic movement in programming venture arranging and cracking. It is performed at different levels like task level, program level, organization level ,industry level, and even national and universal level[2]. Risk emerges from an assortment of point of view like undertaking disappointment, safety, security thus on. Risk administration process incorporates chance identification, risk prioritization and hazard treatment. In chance ID dangers are recognized inside degree utilizing number of assets like undertaking objectives, risk rundown of past activities etc[3]. Risk prioritization incorporates rating the hazard effect and rating the hazard probability. Risk treatment incorporates the hazard avoidance, risk transfer, risk moderation and hazard acknowledgment[4].

Today numerous difficulties are looking during the time of building up a product. Risk shows up in all the product ventures from the earliest starting point to the end. For

maintaining a strategic distance from and limiting the dangers we need to initially recognize, and afterward assess the risks. It should be possible by utilizing the current hypothetical learning and practices[5]. we need to deal with the hazard identified with our undertaking as timing, quality, cost, or even a little error will impact the project. Project disappointments are because of administration issues incorporate issues with venture structure, venture resources, planning methodologies, inadequate chance administration , specialized issues which incorporates poor programming design, non-adherence to programming requirements, improper specialized reviews, incorrect improvement and testing methodologies[6]. Risk administration exercises are done in different laevels which incorporate task level, process level and product level[7]. In this we are managing the diverse prominent hazard administration process models, and the exploration inclines in programming designing risk management. In this we need to know the risks, evaluate their seriousness and result and afterward to balance the arrangement relying upon the idea of risk. It manages the arrangement to limit any unanticipated issues[8].

Dealing with the risks should start at the main phase of program arranging and proceed for the duration of the life-cycle of the program. For finishing a mind boggling programming advancement risks inside planned boundaries, hazards on the task ought to be surely knew and overseen[9].

Task disappointments are the after effect of the variety of dangers characteristic in programming venture condition. Programming improvement risks are accumulations of bigger projects with numerous communications and conditions. It includes a formation of something that has never been finished in spite of the fact that the advancement forms are comparable among different projects. Thus, programming advancement ventures have a horrid reputation of cost and calendar invades and quality and ease of use issues. There are distinctive kinds of dangers that will influence financial plan, client fulfilments, and framework execution. Different examinations demonstrate that 15 to 35% of all product ventures are dropped by and large, and the rest of the tasks experience the ill effects of calendar slippage, cost invades, or inability to meet their project objectives[10]. This paper tends to exercises gained from executing venture chance administration rehearses in programming improvement condition.

II. RISK IDENTIFICATION

Hazard recognizable proof is an endeavour to indicate dangers for the venture plan which incorporates assessing, planning asset stacking, etc .Generic dangers are a potential risk to each product venture. Item particular dangers just be distinguished by those with a reasonable comprehension of the innovation, the general population, and the condition that is particular to the task to be constructed. Plan and the item verbalization of degree are examined. One system for perceiving perils is to make a risk thing agenda. The agenda can be utilized for recognizing the hazard . It centres around some subset of unsurprising dangers in the accompanying subcategories:

•Product measure — dangers that are related with the general size of the product.

•Customer attributes — dangers that are related with the complexity of the customer. In this the capacity of the designer's to speak with client in an opportune way[3].

•Process definition — dangers related with how much the product procedure has been defined. It is trailed by the advancement association.

•Development condition — dangers related with the accessibility and nature of the apparatuses to be utilized to fabricate the item.

Autonomously from the idea of a task, process administration factors like cost, quality, time, and extension are basic choice components for a decent and fruitful execution of an undertaking. In programming building, venture arranging and execution are very impacted by the innovative idea of the considerable number of people required with the undertaking. In this way, dealing with the

dangers of various venture stages is a key errand with extraordinary significance for venture directors that ought to be centred around control and observing viably the alluded factors, and also all the others worried about their unique circumstance.

Project Risk analysis is a critical part of risk management. In this stage the hazard is distinguished and after that sorted. After the arrangement of hazard, the dimension, probability (rate) and effect of the hazard is broke down. Probability is characterized in rate subsequent to inspecting what are the odds of hazard to happen because of different specialized conditions. These specialized conditions can be:

1) Multifaceted nature of the technology
2) Specialized information controlled by the testing group
3) Clashes inside the group
4) Groups being conveyed over an extensive topographical region
5) Use of low quality testing apparatuses

With effect we mean the result of a hazard in the event that it occurs. It is critical to think about the effect since it is important to know how a business can get influenced:
1) What will be the misfortune to the client
2) How might the business endure
3) Loss of notoriety or mischief to society
4) Money related misfortunes
5) Legitimate activities against the organization

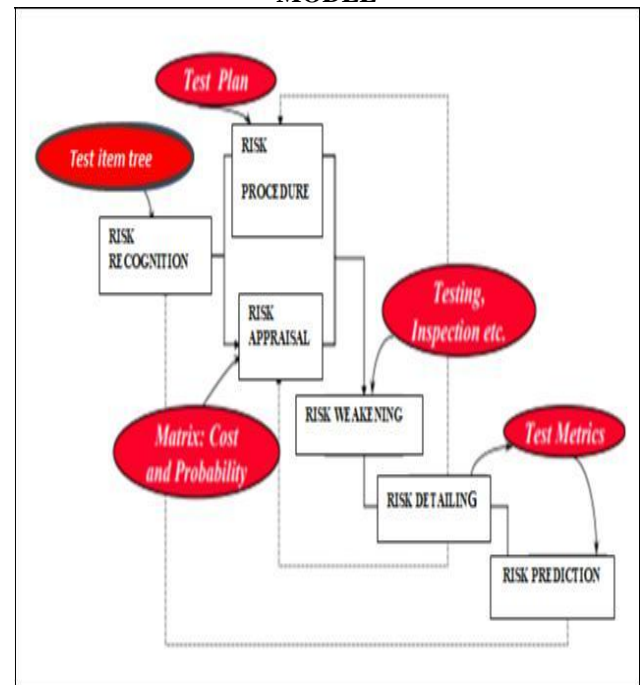### TABLE 1: RISK ANALYSIS MODEL

Fig.1

Hazard recognizable proof and hazard appraisal ought to be done as right on time as conceivable to limit negative deviations and to amplify positive outcomes amid venture improvement. Surveying programming dangers implies deciding the impacts of potential dangers. For the motivations behind hazard evaluation the robotized apparatus may give predefined set of criteria that would assist the specialists with conducting assessment. Risks ought to be surveyed by two measurements - likelihood and effect. The undertaking group will take these two measurements and duplicate them together to create a hazard score, so the dangers can without much of a stretch be positioned and requested, considering the group and patrons to exchange about how to react to each hazard. The Risk Score causes us decide a feeling of need among the dangers. Consider the event that, for instance, the primaryhazard has a score of $100K and the second of $160K, at that point the second hazard speaks to a greater risk to the venture's baselines and has greater need. For each hazard evaluation, the risk group must build up how the genuine appraisal will be led[10]. Having bunches outside the undertaking gathering may fit if the advantages anticipated that would do the examination are past those open from inside the program gathering. This gathering is the middle social occasion of individuals who will lead the peril examination and commonly consolidates individuals with ability in systems planning, collaborations, creating, testing, plan examination, and cost assessing. The most generally utilized system, that upheld by all hazard administration devices is designated "Hazard guide" or "Hazard seriousness network" that survey chance likelihood/ probability and effect of the potential hazard .

Risk assessment includes estimating the likelihood that a hazard will turn into a reality; affect investigation includes estimating the affectability of the task to each distinguished hazard. The key inquiries are:

- What is the hazard – in what capacity will I remember it on the off chance that it turns into a reality?

- What is its likelihood occurring – high, medium or low?

- How genuine a danger does it posture to the venture – high, medium or low?

- What are the signs or triggers that we ought to pay special mind to?

TABLE 1:RISK SEVERITY MATRIX

OCCURRENCE	IMPACT			
	CATASTROPHIC	MAJOR	MODERATE	MINOR
FREQUENT	HIGH	HIGH	MEDIUM	MEDIUM
OCCASIONAL	HIGH	MEDIUM	LOW	LOW
REMOTE	MEDIUM	MEDIUM	LOW	LOW

Risk assessment matrix is a method used for the risk identification where the risk impact is specified[2].A risk assessment matrix is the one in which large portion of the data required can be effectively separated from the hazard evaluation frames. It is made as a straight forward table where the risks are gathered dependent on their probability and the degree of harms or the sort of outcomes that the dangers can result in. Making a hazard the executives grid is the second step during the time spent hazard the executives, and it pursues the initial step of topping off a risk appraisal frame to decide the potential dangers. The readiness of risk evaluation shapes is an increasingly detailed errand and includes deciding dangers, gathering hazard information, deciding the likelihood and the effect dimensions of the dangers, understanding outcomes, doling out needs and creating risk counteractive action methodologies. Then again, a risk evaluation network just furnishes the task group with a fast perspective of the dangers and the need with which every one of these dangers should be dealt with. Red zone distinguishes the most imperative occasions, yellow zone records chances that are modestly vital and green zone occasions presumably can be securely overlooked. Venture administrator may tune the robotized instrument to tweak which blends of likelihood and effect result in a hazard's being named high hazard (red), medium chance (yellow), and generally safe (green).

High: The risks that fall in this category are marked in Red color. Risks that are portrayed as both high effect and high probability of event frequently cause an undertaking to be ended, or to fall flat on the off chance that it is proceeded notwithstanding the risks. In this circumstance, the proprietor's administration must decide whether the task ought to be ended or if the undertaking is so mission basic or the potential advantages are great to the point that going for broke is legitimized. Hazard the executives does not infer that no risks are taken; it implies that the risks gone out on a limb. For instance, a proprietor may choose to continue if there is a sensible desire that enough building or the board exertion can diminish either the effect or the probability of the occasions, to such an extent that the hazard can turn out

to be either low effect, high likelihood or low likelihood, high effect. Frequently such a choice is dependent upon accomplishing the essential hazard decreases by some due date. There are significant difference in performance and interface requirements.

Medium: The risks that fall in this category are marked in Yellow colour. These events are rare occurrences, and therefore it is very difficult to assign probabilities to them based on historical records. Data do not exist and so subjective estimates of probabilities are necessary. However, the objective is not the scientific determination of accurate probabilities of rare events but the determination of what management actions should be taken to monitor, mitigate, and manage the risks. There are some differences in performance or interface requirements.

Low: The risks that fall in this category are marked in green colour can be ignored as they usually do not pose any significant problem. Risks that can be described as both low effect and low probability of event are basically unimportant and can for the most part be dispensed with from dynamic thought. The primary worry of the proprietor's venture chief is to screen these components adequately to discover that the effect or probability does not increment. Performance and interface requirements are verified to be identical.

III.RISK MANAGEMENT METHODS

In this paper we are adopting a method which consist of 2 phases. The first one is the risk identification and then involves the risk management planning. Identification of the risk involves analytical methods like a risk checklist which evaluates the risk. In risk checklist the probability of occurrences is taken and the possible negative effects for each risk is identified. Management of the risk involves various measures to be adopted to reduce the probability of risk events occurring and to reducing the negative impacts of the risk events. Risk resolution is the process in which various defined measures are carried out and then risk monitoring check the efficiency of these measures which are implemented. Hazard is a dubious future occasion or condition which if happens influence the mission objectives. It could have a positive or negative effect. Risk impact is sum and kind of hazard that an association is set up to seek, accept or tolerate. Risk resistances incorporate association's availability to hold up under the great many risks medications keeping in mind the end goal to accomplish its objectives. A chance is a potential issue it might happen, or else it may not.

A.   *Reactive Risk Management*

- Project group responds to dangers when they happen[3].
- The programming group don't take care of dangers except if something turns out badly

B.   *Proactive Risk Management*

- •A proactive system starts some time before specialized work is started[11].
- •Then, the product group sets up an arrangement for overseeing hazard. The essential goal is to maintain a strategic distance from hazard.

Hazard dependably includes two attributes:

Uncertainty — the hazard might possibly happen.

Loss—if the hazard turns into a reality, at that point misfortunes will happen.

Because of threats it is basic to assess the level of weakness and the level of mishap related with each risk. To accomplish this, different classes or sorts of dangers are considered

- •Project Risks: Make dangers in the task plan.
- •Technical Risks: Threaten the quality and convenience of s/w[2].
- •Business Risks: Threaten the possibility of s/w.
- •Known Risks: The business and specialized condition in which the undertaking is creating is revealed after watchful assessment of the task plan.
- •Predictable Risks: These are chance anticipated from the past undertaking encounters.
- Unpredictable Risks: Extremely hard to distinguish ahead of time

IV. RISK ADMINISTRATION IN PROGRAMMING ADVANCEMENT VENTURES

Programming ventures are high-hazard exercises, creating variable execution outcomes. The partners of undertaking administration started developing in 1985, and chance administration surfaced in 1996, when organizations perceived that hazard administration includes more than cushioning a gauge or a calendar. Hazard administration designs are currently incorporated into the venture designs. A hazard can be made out of two segments: the likelihood that a misfortune will happen, and the significance or greatness of this conceivable loss. Venture chance is a flawed event or condition which, if it happens, has a positive or negative effect on no less than one envision goals, for instance, scope, timetable, cost, or quality. Risks in programming ventures incorporate various factors or conditions that may represent a genuine danger to the fruitful fulfilment of the task overseeing hazard includes measuring its significance, assessing its likelihood of event and its conceivable effect on venture execution, and additionally the advancement of systems to control it. The achievement factors in actualizing tasks should cover four zones: accomplishment of improvement process; accomplishment of the utilization procedure; nature of item; and effect on the organization. A

fruitful undertaking relies upon criteria, for example, usefulness, quality, and convenience.

Execution danger is the level of weakness that the thing will meet its essentials and be fit for its arranged use. Cost chance is the level of powerlessness that the endeavour spending will be maintained. The impact of each peril driver on the risk part is apportioned into one of four impact orders insignificant, fringe, fundamental, or deplorable.

V. HAZARD PROJECTION

Hazard projection, in like manner called chance estimation, tries to rate each peril in two ways. The likelihood or probability that the risk is real. The results (i.e. effect or result) of the issues related with the risk, should it happen. The wander coordinator, close by boss and concentrated staff, performs four danger projection activities. It will develop a scale that mirrors the expected likelihood of a peril, by then depict the after-effects of the risk and measure the impact of the risk on the endeavour and the product. The general exactness of the peril projection so that there will be no misguided judgment. By sorting out risks, the gathering can relegate resources where they will have the most impact.

Recognizing the dangers related with the execution of Information Technology (IT) anticipates can turn into a noteworthy test for administrators, since there are different ways to deal with portraying and characterizing dangers Ventures in the danger organization process: chance organization masterminding, chance unmistakable evidence, abstract hazard examination, quantitative risk examination, chance response orchestrating, and risk checking and control. Since dangers shift in nature, seriousness, and outcomes, it is essential to distinguish, comprehend, and oversee abnormal state dangers.

The challenges and substances in applying fruitful programming risk organization frames are troublesome, particularly planning the peril organization shapes into programming change affiliations. Regardless, the upsides of realizing convincing risk organization gadgets and frameworks in programming change wander are likewise unbelievable. Current perceptions and creating examples of various programming peril organization sharpens are assessed and risks specific to programming headway wanders are recognized. Executing fruitful danger organization process will win by changing the definitive culture.

Hazard detailing depends on data got from the past themes and looks in danger status against already distinguished dangers. Hazard revealing gives capacities to picture chance data in diagrams and outlines that can be further sent out to Excel, Word, and PowerPoint in local outline arrange for simple dissemination to others. Hazard observing and documentation of exercises learned conclude the hazard administration forms. Utilization of the hazard database from past activities to design current ventures can assist the

supervisors with avoiding most definitely known issues and lets them take in not from their own slip-ups, but rather utilize best practice involvement and venture skill.

Keeping in mind the end goal to offer superb programming items to the market on time and according to the market's prerequisites, it is imperative to discover PC based instruments with high precision likelihood to enable supervisors to settle on their choice. Programming hazard examination and administration can be mostly moved into information investigation or information mining. Robotized instruments are intended to help venture directors in arranging and setting up ventures, doling out assets to undertakings, following advancement, overseeing spending plans, prerequisites, changes and dangers and additionally investigating workloads. What ought to be the choice criteria for a mechanized device? It relies upon the motivation behind hazard administration in the given programming advancement venture and the requirements of the colleagues. Hazard examination and administration are normally in light of the data gathered from customary information, or comparable understood cases, good judgment, aftereffects of investigations or tests, exploring of accidental introduction. The primary thing for the robotized apparatuses is to gather authentic information to develop a database. Once the database exists, it will process the information and mine some valuable data to encourage the supervisor investigate dangers and decide. The present devices can naturally store all task results in a focal store shared by all clients. Necessities and changes can be altered, determined and organized. Errands are gotten from rerequisites, which can be traceable through the whole life cycle. This implies information stockpiling and examination ought to be an essential measure while picking the framework. The fundamental points of interest of electronic hazard administration devices are simple establishment and setup and natural client arranged outline, when the client can begin entering and dealing with the dangers in an almost no time. Framework get to by means of a safe web/intranet association makes arrangement snappy, helpful and simple.

The usefulness of such frameworks as a rule underpins the fundamental hazard activities, such as sorting, organizing, displaying, following and detailing recognized dangers. Worldwide accessibility, access to the product from any machine, cost sparing (as there are no equipment expenses) and absence of IT bolster make web-adjusted hazard administration arrangements more mainstream. Obviously, such administrations have detriments, for example, low customization conceivable outcomes, work with predefined usefulness where overseeing and following practical changes is a test, challenges with different applications incorporation. This clarifies the reality, that many hazard administration programming suppliers have a scope of programming arrangements – from "overwhelming" customer/server application with chance check records and broad scope of

hazard administration capacities at present accessible to "light" web arrangements that empower less demanding and less expensive access profoundly hazard administration usefulness. This does not imply that a solitary online device for overseeing dangers and openings can't be utilized to address every one of the issues of various IT partners and colleagues. It relies upon the hazard administration reason and the size of hazard administration exercises and gatherings included, so a client may pick precisely the arrangement he or she needs.

VI.DEVELOPING RISK TABLE

TABLE 2:RISK

RISKS	PROBABILITY	IMPACT
Size estimate might be altogether low	60%	Major
Bigger number of clients than planned	30%	Moderate
Less reuse than arranged	70%	Major
End clients oppose framework	40%	Moderate
Delivery due date will be fixed	50%	Major
Financing will be lost	40%	Catastophic
Staff inexperienced	30%	Major

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The probability can be taken from the previous historical data of risk in projects. When table is finished, manager will give request of prioritization to the hazard. The undertaking chief examinations the resultant arranged table and characterizes a cut-off line. The cut-off line infers that exclusive dangers that lie over the line will be given further consideration. Dangers that fall beneath the line are considered as second-arrange prioritization.

Hazard factor that has a high effect however a low likelihood of event then administration will give little consideration or some time no attention. But if chance factor that has high effect and high likelihood of event then administration will give high consideration.

VII.ASSESSING RISK IMPACT

Three components influence the results that are likely if a hazard occurs:

Nature

Scope

Timing

The idea of the hazard shows the issues that are likely on the off chance that it happens. For instance, a specialized hazard, improvement condition change. The extent of a hazard consolidates the strictness with its general distribution. For illustration the amount of the venture will be influenced or what number of clients are harmed? The timing of a hazard thinks about when and for to what extent the effect will be felt.

To decide the general outcomes of a hazard initially decide the normal likelihood of event esteem for each hazard component. then decide the effect for every part in light of the criteria. Complete the hazard table and dissect the outcomes as portrayed. Presently measure, Risk presentation (RE).RE = P x C. P is the likelihood of event for a hazard and C is the cost to the project. Once a gauge of the cost of the hazard is determined, register RE for each hazard in chance table. The aggregate hazard introduction for all dangers can give a way to modifying the last cost gauge for a project. The venture group ought to return to the hazard table at general interims, re-examining each hazard to decide when new conditions cause its likelihood and effect to change. As a result of this movement, it might be important to add new dangers to the table, expel a few dangers that are not any more applicable, and change the relative places of still others. Compare RE for all dangers to the cost evaluate for the task. On the off chance that RE is more prominent than 50 percent of undertaking cost, the attainability of the venture must be assessed.

A risk is any unverifiable occasion or condition that may influence your undertaking. Not all dangers are negative. A few occasions (like finding a less demanding approach to complete a movement) or conditions (like lower costs for specific materials) can encourage your project. At the point when this occurs, we consider it a chance; however it's as yet dealt with simply like a hazard. There are no assurances on any task. Indeed, even the most straightforward action can transform into unforeseen issues. Anything that may jump out at change the result of a venture movement, we call that a hazard. A hazard can be an occasion or it very well may be a condition. In any case, it's something that could conceivably happen however in the event that it does, it will compel you to change the manner in which you and your collaboration on the project.

TABLE 3: Checklist For Assessment of Risks

SNO.	Check Point / Defect Statement	Check Mark (√) the Appropriate Column	
		Yes	No or N/A
1)	Estimated size of the product in LOC or FP?		
2)	Number of users of the product?		
3)	Percentage deviation in size of product from average for previous products?		
4)	Percentage deviation in size of product from average for previous products?		
5)	Affect of this product on company revenue?		
6)	Costs associated with a defective product?		
7)	Are software tools used to support the testing process?		
8)	Amount of reused software?		

Checklist as a rule contains a lot of surveys or a hazard list dependent on the experience from past undertakings. Surveys for the most part decide the present condition of the undertaking through open or shut inquiry and endeavour to distinguish factors which present hazard in the advancement. The hazard list makes out of run of the mill factors which present potential dangers in the product venture. The two surveys and hazard records consider a few zones of advancement, for example, venture cost and calendar, experts, client/client. The principle advantage of the checklist approach for hazard recognizable proof is that it gives a snappy, simple to utilize and controlled approach to distinguish and survey the risk introduction against the central point.

VIII. RISK MITIGATION , MONITORING,AND MANAGEMENT

Hazard investigation objective is to help the undertaking group in building up a procedure for managing hazard. A successful methodology must think about three issues:
- Risk shirking or alleviation.
- Risk observing
- Risk administration and possibility arranging

Proactive way to deal with chance, shirking is dependably the best system. This is accomplished by building up an arrangement for hazard mitigation. For case, accept that high staff turnover is noted as a venture risk. To alleviate this hazard, venture administration must build up a system for decreasing turnover.

As the task continues, hazard observing exercises initiate. The undertaking supervisor screens factors that may give a sign of whether the hazard is winding up pretty much likely. In the instance of high staff turnover, the accompanying variables can be monitored: General state of mind of colleagues in light of task pressures. Potential issues with remuneration and benefits. The accessibility of occupations inside the organization and outside it. Risk administration

and possibility arranging accept that moderation endeavours have fizzled and that the hazard has turned into a reality. The venture is well in progress and various individuals declare that they will clear out. On the off chance that the moderation system has been taken after, reinforcement is accessible, data is recorded, and learning has been scattered over the group. What's more, the venture supervisor may briefly refocus assets (and correct the undertaking plan) to those capacities that are completely staffed, empowering newcomers who must be added to the group to "get up to speed."Those people who are leaving are requested to stop all work and spend their last a long time in "learning exchange mode."This may incorporate video-based information catch, the advancement of "discourse archives," as well as meeting with other colleagues who will stay on the project.

IX. CONCLUSION

Risk management requires the whole contribution of the program group and furthermore require assistance from the specialists for settling the issues in outline ,manufacturing, threat innovation etc. To dodge the issues it is vital to comprehend on the specific starting the extent of the project. IT extends dependably move toward becoming over budget ,behind schedule and temperamental in all cases ,this happens on the grounds that product advancement and its execution is a confounded procedure which incorporates numerous prerequisites and expectations. These ventures are having reliant parts thus any postponement in one segment will effortlessly influence the whole project. Risk administration has the essential objective to distinguish the potential issues and react to it with adequate lead time to keep away from the crisis. so by the proposed chance administration instruments will manage the hazard administration programs in most effective manner. Here we are giving more thoughtfulness regarding the different undertaking administration territories, for example, contract administration ,quality control, requirement administration etc.It recognizes the hazard identified with the task low quality, hierarchical disappointments, consistent necessities change, contractual workers administration and so forth, that straightforwardly impact the task execution and achievement. This work depicts hazards in programming improvement which are available in each product advancement venture since programming improvement depends on information and new technologies. so the odds for accomplishment of a product advancement venture are firmly associated with fruitful hazard tending to. Here we have nearly researched risks and hazard affect regions in programming improvement . With a specific end goal to accomplish productive hazard administration, we have proposed different hazard management procedures reasonable for various programming improvement ventures as per the measure of hazard affect. Methodologies proposed in this work should upgrade chance administration on programming improvement ventures thus it will build chances for accomplishment of the undertakings.

REFERENCES

[1] Uzair Iqbal Janjua, Jafreezal Jaafar, Izzatdin B A Aziz, "Integration of supportive processes with elementary processes for making current practices of software project risk management more effective", *Mathematical Sciences and Computing Research (iSMSC) International Symposium on*, pp. 292-297, 2015

[2] Ignacio Marin-Garcia, Patricia Chavez-Burbano, Victor Guerra, Jose Rabadan, Rafael Perez-Jimenez, Hua Wang, "Considerations on Visible Light Communication security by applying the Risk Matrix methodology for risk assessment", *PLOS ONE*, vol. 12, pp. e0188759, 2017

[3] A. Nguyen-Duc, D. S. Cruzes, R. Conradi, "The impact of global dispersion on coordination team performance and software quality-a systematic literature review", *Information and Software Technology*, vol. 57, pp. 277-294, 2015

[4] Saad Yasser Chadli, Ali Idri, *Trends and Advances in Information Systems and Technologies*, vol. 746, pp. 408, 2018.

[5] M. Usman, F. Azam, N. Hashmi, "Analysing and reducing risk factor in 3-c's model communication phase used in global software development", *Information Science and Applications (ICISA) 2014 International Conference on*, pp. 1-4, 2014.

[6] Hussein Hashimi, Alaaedin Hafez, Mutaz Beraka, "A Novel View of Risk Management in Software Development Life Cycle", *Pervasive Systems Algorithms and Networks (ISPAN) 2012 12th International Symposium on*, pp. 128-134, 2012.

[7] S. Y. Chadli, A. Idri, J. L. Fernndez-Alemn, J. N. Ros, "Frameworks for risk management in gsd projects: A survey", *Intelligent Systems: Theories and Applications (SITA) 2015 10th International Conference on*, pp. 1-6, Oct 2015.

[8] S. V. Shrivastava, U. Rathod, "Categorization of risk factors for distributed agile projects", *Information and Software Technology*, vol. 58, pp. 373-387, 2015.

[9] Zakari Tsiga, Michael Emes, Alan Smith, "Implementation of a risk management simulation tool", *Procedia Computer Science*, vol. 121, pp. 218, 2017

[10] S. Betz, S. Hickl, A. Oberweis, "Risk Management in Global Software Development Process Planning", *2011 3th EUROMICRO Conference on Software Engineering and Advance Application*, pp. 357-361, August-September 2011

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