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Risk Identification ,Quantification In Post Implementation Of C-ERP

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Abstract—*As Small and Medium Scale Enterprises (SMEs) are getting more client centered and benefit driven they are embracing devices like Enterprise Resource Planning (ERP) frameworks with a specific end goal to robotize and incorporate the greater part of an organization's business forms for the smooth working of the association. Nonvalue including business procedures are expelled and the authoritative structure is streamlined with the utilization of ERP frameworks. The review announced in this paper expects to recognize, evaluate furthermore, propose enhancements to ERP post-usage weaknesses because of human related hazard elements for a discreteproducing unit in India. The authoritative human-related elements post execution was investigated by embracing top to bottom meeting and poll reactions as the principle strategy for information gathering. The discoveries recognized that the accomplishment of ERP frameworks is thwarted by resistance of clients to innovation change. The human variables found in the review were ordered to be mental, behavioral, fragmented preparing and human blunders at the season of information section. The review likewise shows a solid requirement for change in the preparation structure given by sellers with a specific end goal to effectively execute the ERP framework. In appear differently in relation to specialized dangers and neglecting the inadequate business procedures and business disadvantages, human-related dangers because of progress administration methods connected are more vital to potential ERP disappointments and can have long haul suggestions for the achievement of ERP use in assembling units.*

Keywords-*ERP,SMEs, ERP Framework, Risk identification, Ontology.*

I. INTRODUCTION

Man, material and machines are the three essential assets of any assembling association. Dealing with these assets is imperative for the advancement and survival of any association. A productive data stream is a one of a kind instrument that will help the administration to facilitate and use these assets adequately. [1]Data frameworks/integrated system(IS) over distinctive utilitarian units of a venture prompt brokenness, repetition and waste. Subsequently the need of great importance for IS joining drove firms to receive Enterprise Resource Planning (ERP) frameworks and is seen by different associations as an answer for their issues.[2]

The initials ERP begun as an expansion of material prerequisites arranging and PC incorporated producing. It was presented by research and examination firm Gartner in 1990.[3] ERP frameworks now cover all center elements of an undertaking, paying little mind to the association's business or sanction. ERP frameworks are undertaking wide frameworks that, due to their mix, mechanize the greater part of an organization's business forms like assets, data and capacities of a business from shared information stores. An ERP framework has a benefit arranged design with measured equipment and programming units or "administrations" that convey on a neighborhood arrange. The measured outline enables a business to include.[4]

At first, the engineers concentrated on the expansive scale enterprises, which brought about a result of high cost that can't be managed by little and medium endeavors (SMEs). In any case, as outsourcing is the request of the day, expansive businesses should be completely coordinated with outsourcing units, which are for the most part little and medium ventures. Consequently, as it were mechanization of data and basic leadership exercises of just huge ventures can't serve the necessity

of these data frameworks.[5] Inventory network administration, which is picking up notoriety all through the world, requests finish combination of the considerable number of players along the inventory network.[6]

II. Post-implementation Success

The accomplishment of a data framework relies on upon the degree of client interest and association in framework advancement, the degree of business process and needs appraisal amid the investigation phase of the frameworks improvement handle and the level of information integration designed into the framework.[7]

The variables that impact the procedure of framework advancement have a noteworthy impact on both authoritative execution and client recognitions about the framework after its execution also, proceeded with use in an association.[8] The post implementation arrange in a framework's life cycle incorporates a number of exercises, for example, post-usage survey, support and upkeep that are basic to the achievement of the framework.[9]

A few pre-usage convictions may influence number of attitudes, those states of mind at that point impact certain executing practices, and some of which effect the effectiveness of post-usage ERP framework.

ERP post execution achievement is dictated by the degree to which an association completes an arranged arrangement of survey/assessment exercises on a post-execution premise which identify with the accompanying five measurements: audit of general venture degree and arranging; survey of driving standards for venture improvement; assessment of rebel determination methodologies; assessment of accomplished advantages; and assessment of client and hierarchical learning.

(49)states the different human elements took note that prompt the adequacy of the usage is:

1.1 Compromise:-

Associations here and there must bargain with clients to totally introduce ERP frameworks. In any case, the framework dependability diminishes with changes in business objectives.

2.1 Interaction

The ERP framework fluctuation and altered cost diminish with expanding BPR assurance, collaboration with the ERP advisor decreases with expanding imperviousness to change from end clients, and engagement from end clients diminish with expanding number of changes toexecution objectives.

3.1 Knowledge

The imperviousness to ERP usage from end clients increments with diminishing proficient administration learning from MIS pioneers. Executing the ERP usage is not a PC issue, but rather a people issue nor is it an IT or IS venture, but instead a business extend.

Hence, MIS pioneers do not have the adequate administrationpreparing/foundation and furthermore need important comprehension of the necessities of clients and other authoritative offices, which can make trouble in powerful correspondence.

4.1 Leadership:-

Lacking execution approach/technique is made by unacceptable ERP pioneers, inferring that choosing the correct officials can limit the conceivable inability to viably actualize ERP framework and amplify the adequacy of the post-usage ERP frameworks.

Education -End-clients over the association must be taught from the onset of ERP usage. Despite the fact that instruction is a foundation of ERP usage, the client preparing is normally just underscored and the courses are focused on PC/framework operation as opposed to onunderstanding the ERP idea and soul.

III. Post-Implementation Risks

The market of post implementation ERP administration is quickly developing and the post implementation ERP might be is the course of second wave called "post go-live".[10][3][11]

Associations definitely experience an extensive variety of inadequacies when utilizing, keeping up and improving their ERP frameworks in the post implementation arrange. These undesirable events expressed underneath can transform the underlying ERP accomplishment into a disappointment and may prompt framework and business breakdown.

5.1 Operational risk

"The risk of a change in value caused by the fact that actual losses, incurred for inadequate or failed internal processes, people and systems, or from external events (including legal risk), differ from the expected losses".

may happen as operational staff utilize ERP frameworks to perform every day business exercises.

Operational hazard is, regardless, reasonable as to keep misfortunes inside some level of hazard resistance (i.e. the measure of hazard one is set up to acknowledge in quest for his goals), dictated by adjusting the expenses of change against the normal advantages.

More extensive patterns, for example, globalization, the development of the web and the ascent of online networking, and in addition the expanding requests for more prominent corporate responsibility around the world, fortify the requirement for appropriate operational hazard administration.

6.1 Analytical risk

May happen as directors utilize ERP frameworks to do expository errands like producing arrangements and figures to foresee and better deal with the indeterminate future.[3]

Because of requests postured by the new worldwide economy in conjunction with the usage of ERP frameworks, directors on the forefronts, "where some say the genuine work is done" are appointed with a more extensive arrangement of duties and errands (e.g. planning, arranging, gauging, quality administration and benchmarking, and so forth) than any time in recent memory some time recently. As an outcome, forefront directors wind up noticeably key clients of the ERP framework furthermore, consequently a critical calculate the accomplishment of these frameworks.[12]

7.1 Organization-wide risk

Top managers are neither specialists in data innovations (IT)/data frameworks (IS) nor clients who utilize the ERP framework widely in their day by day work. They in this manner ordinarily need adequate experience of operational circumstances, operational skill and specialized information to settle on fitting choices on IT arrangements all alone. Henceforth, choice being made by top directors without the guidance or contribution of the IT supervisors is a hazard that may regularly happen in IT anticipates.[13]

In the event that this hazard occasion happens in ERP post-execution, it might prompt unseemly ERP support or upgrade choices, and diminish inspiration of staff and in-house specialists in the client organization. [14]The state of mind of top administrators "will influence not just the stream of assets and data to the [IS] extend, additionally the subordinates see the venture". Top managerssupport is along these lines every now and again announced as a standout amongst the most urgent elements influencing the accomplishment of ERP execution in organizations It can be contended that this element is likewise significant to the achievement of ERP post-execution. Need consistent support from top chiefs can be a huge hazard occasion that may prompt an arrangement of negative outcomes in ERP post-usage, e.g. clashes and contentions in ERP post implementationcan't be comprehended, IS advancement plan is lost or wrong, and so on.[12]

8.1 Technical risk

May bring about hazard occasions that can prevent the actualized ERP framework to meet its proposed capacities and execution necessities.[6]

Frequently a coordinated arrangement from one single ERP merchant may not fulfill all business needs of the organization. In this manner, it is basic for current organizations to obtain reasonable programming modules from various framework merchants to shape their ownERP framework. This approach however may expand intricacy and trouble in blending joining issues. As such, organizations may confront a hazard that consistent joining may not be accomplished between current modules or between current furthermore, new modules of the ERP framework. This may prompt framework discontinuity in the organization, through the production of mechanical islands which are all the time completely disconnected and non-communicant.

IV. Risk Assessment Matrix

A great deal of organizations need to complete a hazard appraisal, however the vast majority of them don't have the experience to decide the hazard in a subjective way. In this way, these associations utilize the instruments for subjective or subjective - quantitative hazard appraisal. A valuable device for hazard appraisal is hazard grids (chance evaluation scoring lattices/ hazard positioning lattices).

In this particular study the risk assessment matrix is derived as 5x5 matrix. It content the likelihood scale and severity scale of measure the product of these two is termed as the Risk PrioritisationNumber.The study is scaled for the six month period of time.

The definition of factors given as below:

9.1 Severity:

This entitled as the "**the degree of impact on something undesirable".**

The severity is fragmented in four impact named and rating given below.

Severity Table

Pt	Severity	Exposure
5	Critical	Operation not Permissible
4	Very Serious	High priority remedial action
3	Serious	Take remedial action at appropriate time
2	Marginal	Risk acceptable: Residual risk
1	Negligible	Risk acceptable:negigibal

Table 1Severity of risk matrix Likelihood

The term likelihood addresses to **"probability of specified occurrence."**
The likelihood distinguish according to their occurrence and given in table below with exposure

Likelihood Table

Pt	Likelihood level	Likelihood of Occurrence / Exposure Criteria
5	Frequent	Likely to occur many times per months
4	Moderate	Likely to occur once per year
3	Occasional	Might occur once in two to four months
2	Remote	Might occur once in four to six months
1	Unlikely	Might occur once in six months

Table 2Likelihood table for risk matrix

Risk level Determination - 5 x 5 Matrix

		SEVERITY				
		Critical (5)	Very Serious (4)	Serious (3)	Marginal (2)	Negligible (1)
LIKELIHOOD	Frequent (5)	25 Operation not permissible	20 Operation not permissible	15 High priority	10 Review at appropriate time	5 Risk acceptable
	Moderate (4)	20 Operation not permissible	16 Operation not permissible	12 High priority	8 Review at appropriate time	4 Risk acceptable
	Occasional (3)	15 High priority	12 High priority	9 Review at appropriate time	6 Risk acceptable	3 Risk acceptable
	Remote (2)	10 Review at appropriate time	8 Review at appropriate time	6 Risk acceptable	4 Risk acceptable	2 Risk acceptable
	Unlikely (1)	5 Risk acceptable	4 Risk acceptable	3 Risk acceptable	2 Risk acceptable	1 Risk acceptable

Table 3Risk matrix

Risk Prioritisation Number= Severityx Likelihood

10.1Design of the Questionnaire

A straightforward, applicable, organized poll covering different Risk components as to the post implementation of the ERP framework was intended to complete the overview inside the association. The survey response was separated into two principle segments, likelihood and seriousness. While likelihood comprised of repetition of incident. Severity comprised of a the effect of that variable. The segments is planned with thought of mental attributes, behavioral qualities, absence of adequate also, persistent preparing and human errors that happen due to information passage. The reactions were subjectively stamped as indicated by the scale given.[11]

V. Risk Ontology

The questioners is designed on the bases of the ontology given below:

Enterprise Resource Planning (ERP) frameworks have now turned into a fundamental piece of hierarchical frameworks. Be that as it may, many organizations are defied with aextensive variety of dangers at the post-usage organize, to be specific when utilizing, keeping up and upgrading their ERP frameworks. In hate critical requirement for research around there, there is a shortage of studies concentrating on post-execution in diverge from an excess of studies concentrating on execution and venture administration angles. This position paper plans to fill this noteworthy research crevice by exhibiting a hazard metaphysics of ERP post-usage.

This cosmologyspeaks to a first endeavor in delivering an extensive model here and comprises of forty potential dangers that may happen in ERP post-usage. Also, the twenty transcendent dangers that make the cosmology, and additionally their potential causes and effects, are introduced and talked about in this paper. This philosophy is a critical commitment for both professionals and scientists. For experts, this cosmology is an essential apparatus for hazard anticipation, administration and control, and also, for key arranging and basic leadership. For scientists, it speaks to a beginning stage for further research and gives early bits of knowledge into an examination field that will turn out to be progressively vital as additional what's more, more organizations advance from usage to misuse of ERPs.[11][15][16]

Risk Ontology Table:

Name of Risk	Sector	Ontology Description
	OR1	OR1.1 Operational staff are reluctant to use the system
	In general	OR1.2 Operational staff input incorrect data to the system
	OR2	
	Sales and	OR2.1Sales staff are not able to obtain needed data and information from the system
Operational Risk	Marketing area	OR2.2 Fail to maintain up-to-date and comprehensive customer info files
(OR)		
	OR3	OR3.1 System contains inaccurate supplier records
	Material and	OR3.2 System contains inaccurate or incomplete bill of materials
	production area	OR3.3 System contains inaccurate inventory records
	OR4	OR4.1 Accounting staff are unwilling to release accounting responsibility and power
Name of Risk	**Sector**	**Ontology Description**
	Financial and	to nonaccount staffs
	accounting area	OR4.2 Non-accounting staff are unwilling/incapable to take up accounting responsibilities
	AR1	AR1.1 Front-line managers refuse to use the system
Analytical Risk	In general	AR1.2 Managers cannot retrieve relevant and needed information from the system
(AR)		
	AR2	AR2.1 Fail to use the system to generate accurate sales forecasts
	Sales and	AR2.2 Fail to utilize the system to predict demands of new products
	marketing area	AR2.3 System fails to support sales personnel to provide special sales promotion to existing customer
	AR3	AR3.1 System fails to generate appropriate master production schedule

	systm lacks	AR3.2 System fails to generate appropriate material net requirement plan
Analytical Risk		
(AR)	AR4	
	Financial and	AR4.1 Fail to use the system to generate appropriate financial budgets
	accounting area	
	OWR1	OWR1.1 Top managers make important IT decisions without consulting IT experts and system
	Top management	users
		OWR1.2 Substantial personnel change in the top management team
		OWR1.3 Top managers do not provide sufficient support to ERP post-implementation
	OWR2	OWR2.1 IS/ERP development plan is missing, ill-defined or misfit with business strategy
	IS/ERP planning	OWR2.2 Direction for further ERP improvement and development is unclear
		OWR2.3 Budget and fund assigned to ERP post-implementation is insufficient
	OWR3	OWR3.1 Fail to form an efficient cross-functional team to continuously review the system
	In-house specialists	OWR3.2 Lose qualified IT/ERP experts
Organizational-(wide)		OWR3.3Lose ERP-related know-how and expertise accumulated over time
(OWR)		
	OWR4	OWR4.1 Users (both staff and managers) do not receive sufficient and continuous training
	System users	OWR4.2 Users are uncomfortable to input or retrieve data from the system
		OWR4.3 ERP-related problems are not reported promptly by system users
Name of Risk	**Sector**	**Ontology Description**
		OWR4.4 Data access right is authorized to inappropriate users
		OWR4.5 Confidential data is accessed by unauthorized people
	OWR5	OWR5.1 Cannot receive sufficient technical support from system vendors
	System vendors and	OWR5.2 Cannot receive sufficient and proper consulting advice from system consultants
	consultants	
	TR1	TR1.1 Different modules of the ERP are not seamlessly integrated
	System integration	TR1.2 Legacy systems are not compatible with new ERP systems
	TR2	TR2.1 Invalid data is not automatically detected when getting into the system

Technical Risk	System faults	TR2.2 Hardware or software crash
(TR)		
	TR3	TR3.1 Technical bugs of the system are not overcome speedily
	System	TR3.2 Outdated and duplicated data is not properly managed
	maintenance and	TR3.3 System is not properly modified to meet new business requirements
	revision	

Table 4:Risk ontology

VI. Conducting the Survey

The questionnaires were given to various users of the ERPsystem to person at the organization. The users were requested to submit in the response.[5]

VII. Scale Used

The wake of get-together the information from the respondents to the survey the information was then altered, classified, examined hen, results then deciphered as a major aspect of the examination.[17]

VIII. Result

As in the organization on the same module number people is working it is needed to collect the all responses from the users. so in the table below the number of user and their average result module wise given.

Sr.no	Name Of module	Number Of Users
1	Project Cost Management	4
2	Project Schedule Management	2
3	Project Monitoring And Control	4
4	Procurement	4
5	Inventory	2
6	Human Resource Management	1
7	Customer Relationship Management	4
8	Finance And Accounting	2
9	Top Authority	2

Table 5:Risk Respondent module wise

The module wise average risk prioritisation number and average percentage.

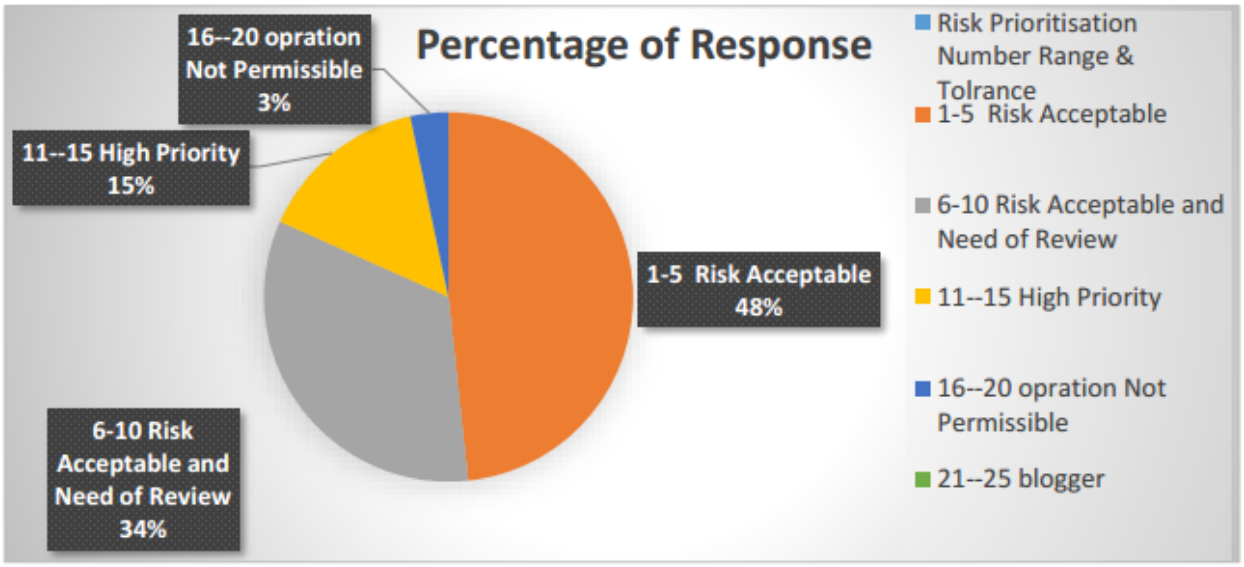

Figure 1:Project cost Management response percentage

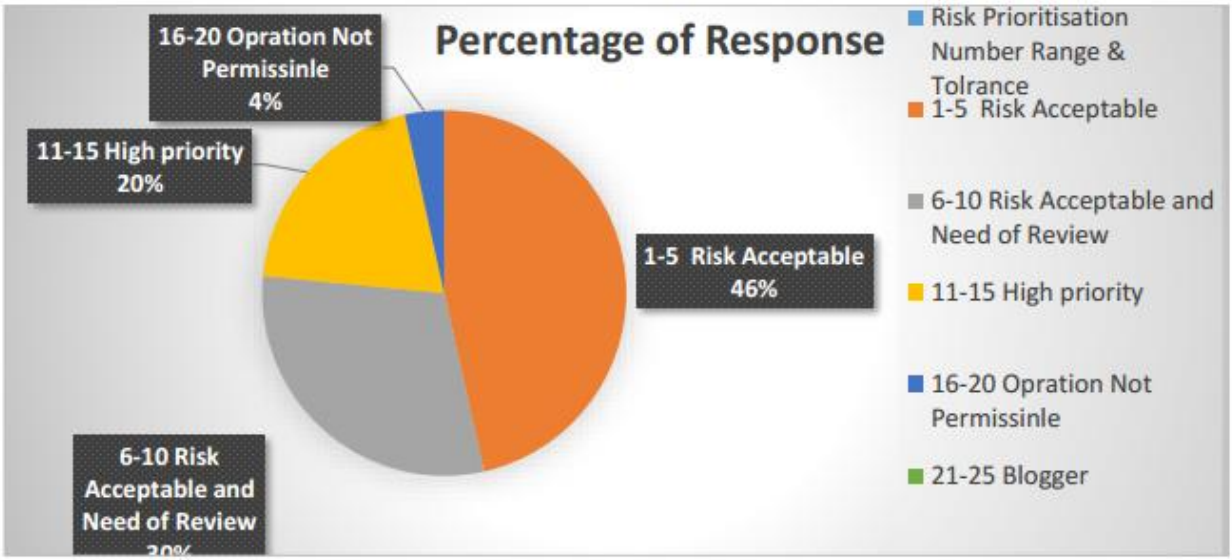

Figure 2:Project Schedule Management response percentage

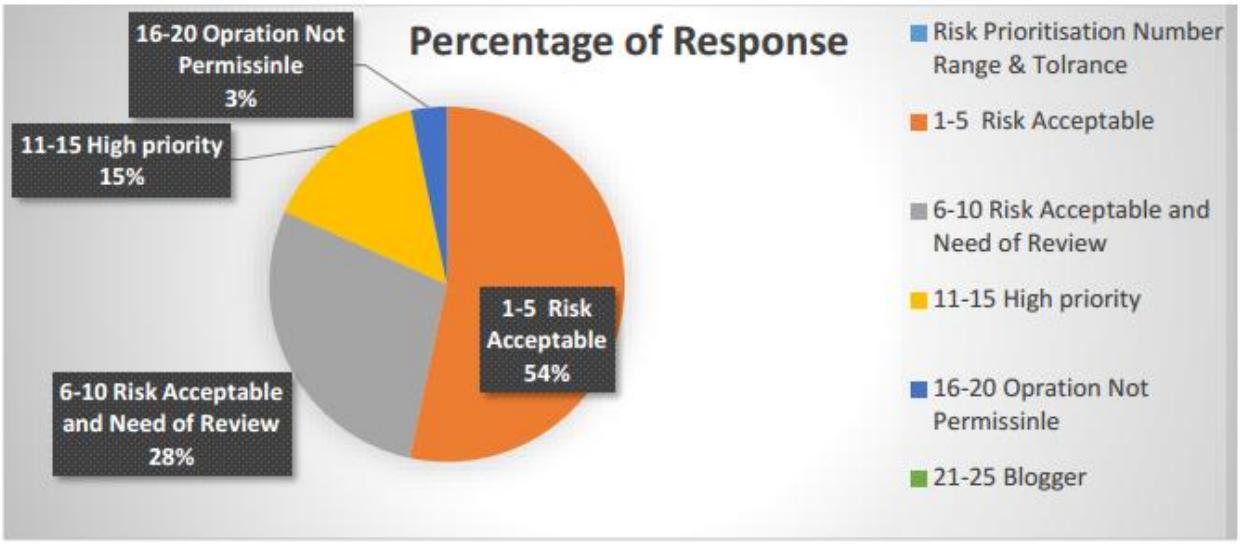

Figure 3:Project Monitoring and control response percentage

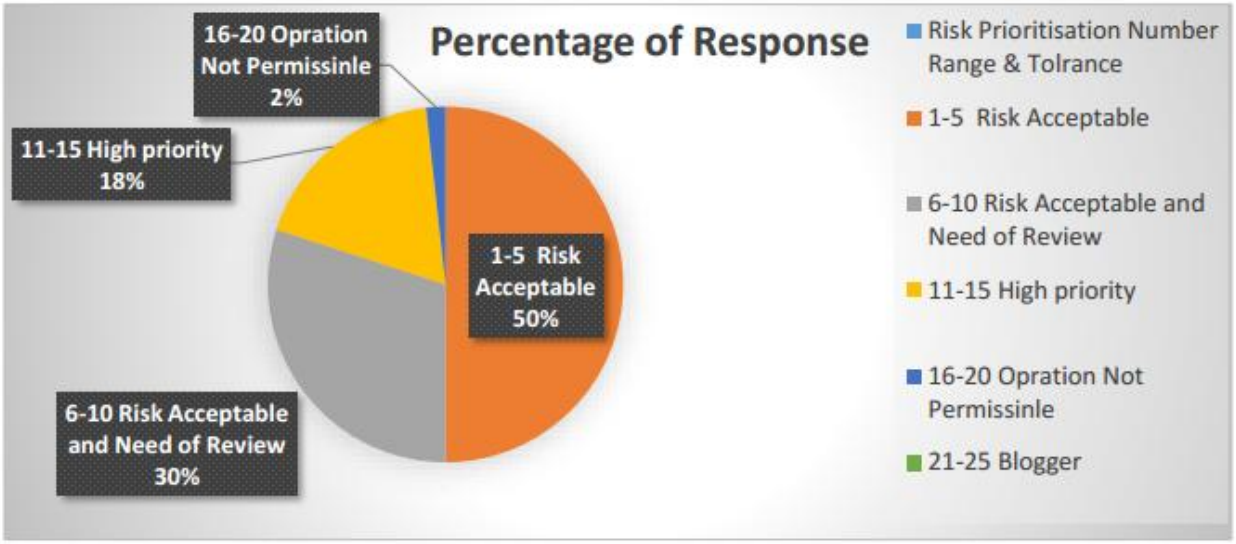

Figure 4:Procurment Management response percentage

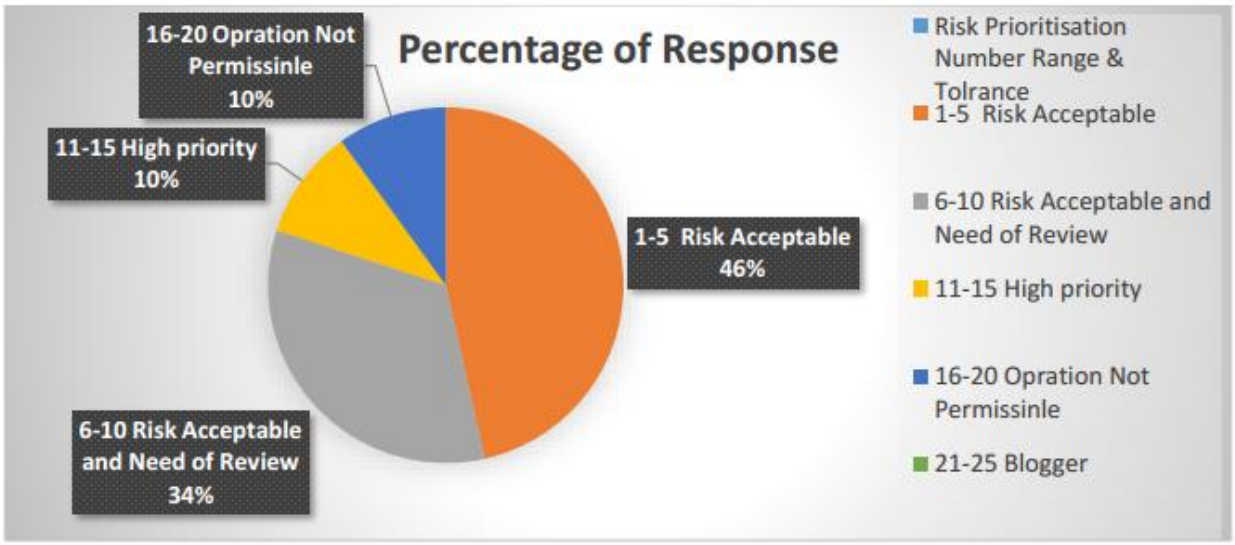

Figure 5:Inventory response percentage

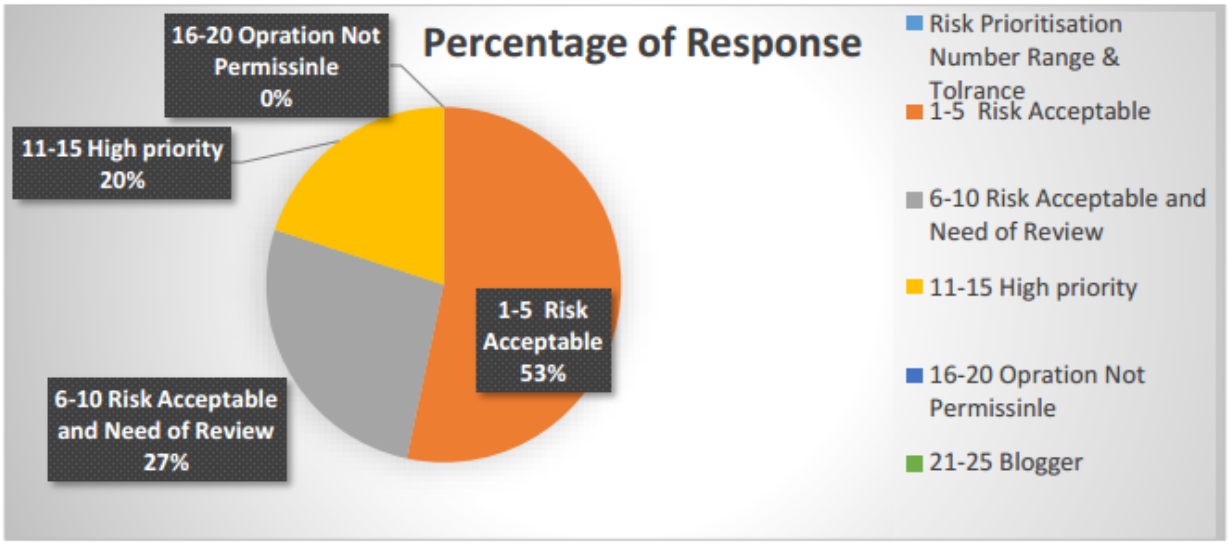

Figure 6:Human Resource response percentage

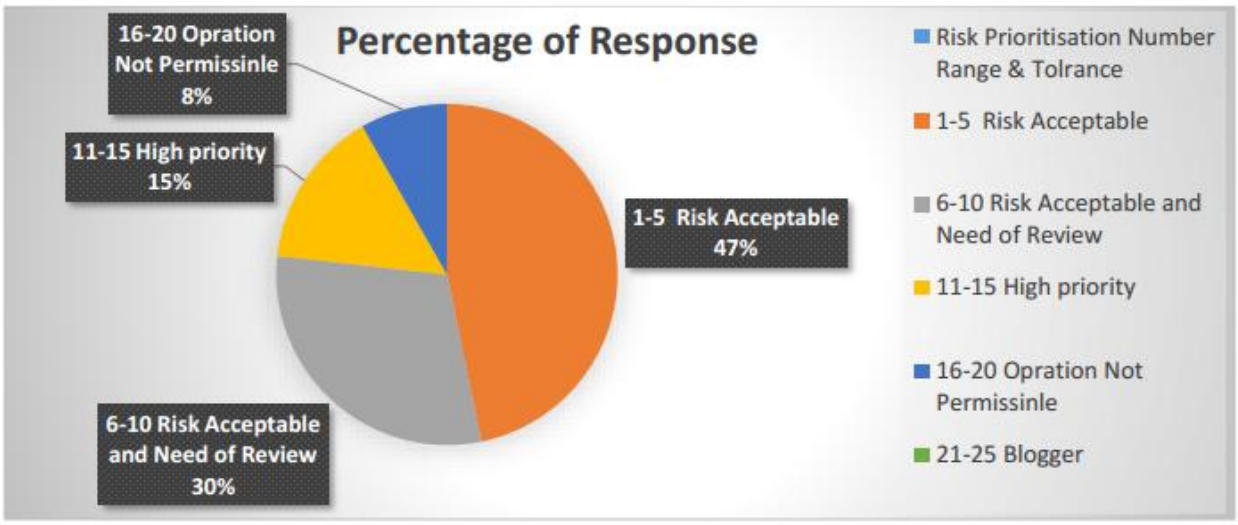

Figure 7:Customer Relationship Management response percentage

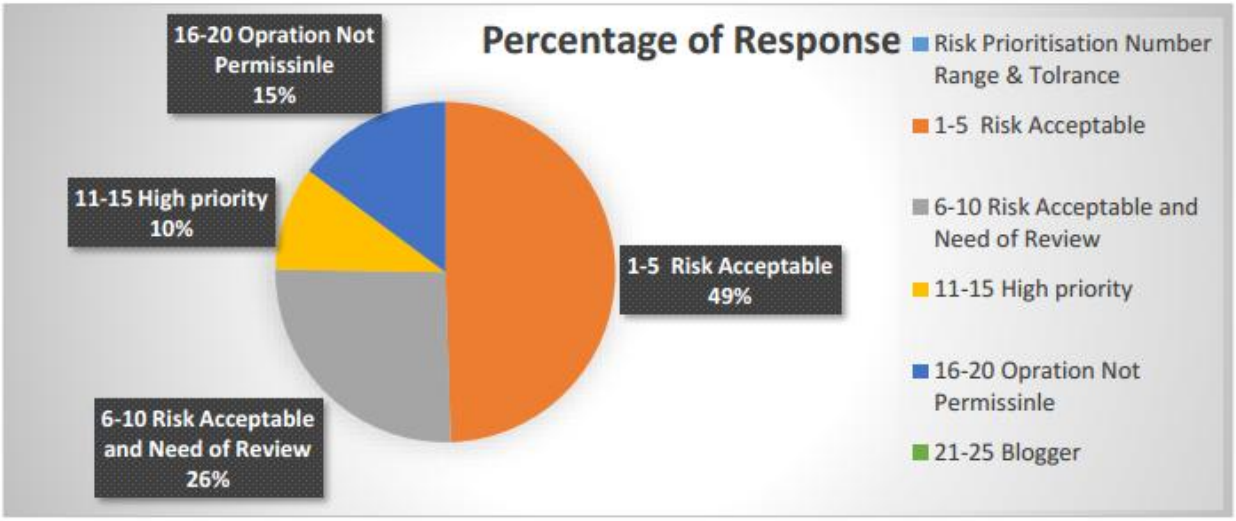

Figure 8:Finance and Accounting response percentage

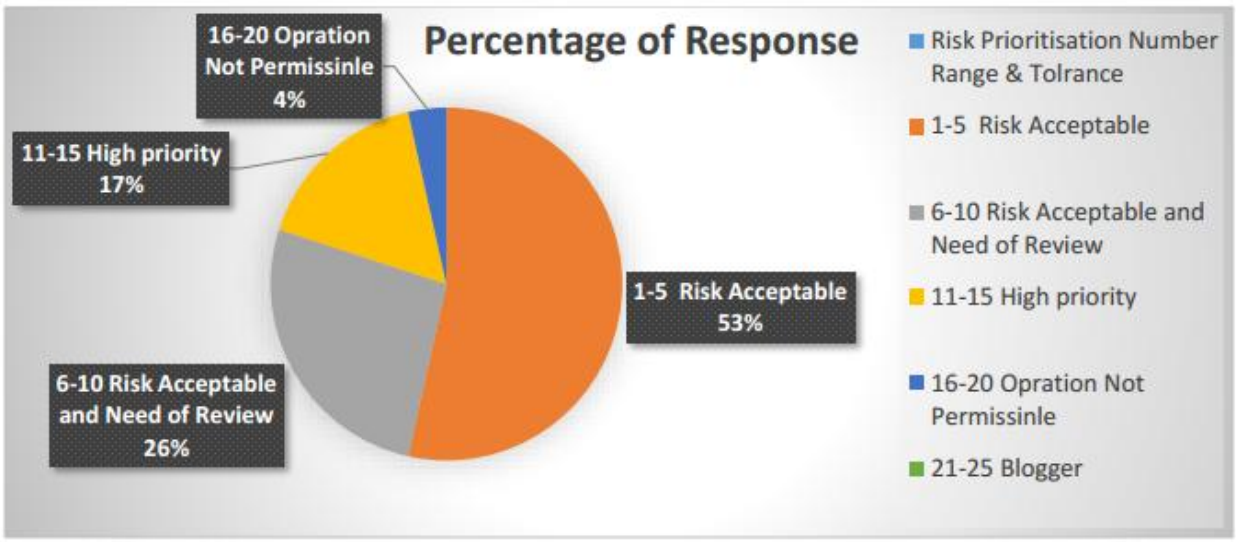

Figure 9:Top Authority response percentage

IX. Risk mitigation plane

Color	Score	Risks	Action
	16 - 25	High	Operation not Permissible Stop operation & review controls. If necessary abort experimentation.
	12 - 15	Warning	High priority remedial action Proceed with extreme caution with PI present at all times. Implement additional (secondary) controls immediately. Review within 7 days. Emergency control measures shall be in place.
	8 -10	Medium	Take remedial action at appropriate time Proceed with care. Additional control is advised. Review shall be implemented within 30 days.
	1 - 6	Warning	Risk acceptable: Residual risk If possible, risk reduction should be further considered, particularly severity. There are no imminent dangers. Frequent review shall be in place especially changes in procedures, materials or environment.

Table 6:Risk Mitigation plan

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