

CA FINAL

RISK MANAGEMENT

NOV 2020 PAPER ANALYSIS

CASE STUDY 5

By Sanjay Saraf Sir

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The Risk Management paper of CA Final Nov 2020 Exam was considered to be a challenging paper bymost studentswho appeared for the Exam. It was challenging in the sense that people could not find the answers from the mapping sheet in the ICAI Study Mat. It was challenging in the sense that most of the questions were applicative wherein:

- > you know where the Risk Register topic is in the study mat, but you have to write something else
- > you know where RCSA is in study mat, but you have to write about the **application** of RCSA in that particular case study
- > you know what is strategic risk-you can pretty much find it in the study mat, but you have to talk about the **key drivers** of strategic risk.

So, it was applicative-applicative-applicative all through out. Even the MCQs were more-or-less related to the case study and not to be found from the institute'smat. All case studies required use of the exam taker's brain& judgement rather than just reproducing content from the mat. My question to you is---- isn't that what case studies actually mean and should be like???! So, people were obviously surprised because they could not find the arbitrage opportunity that was

Was it different for other elective papers?

there in the previous RM papers to date.

No, even the other elective paper have the same status. But RM is in the limelightmore because most people are doing RM these days and they have heard stories of people enjoying arbitrage in the past. As students of the RM paper, you will understand and acknowledge that markets are efficient and arbitrageitself leads to wiping out of the available opportunity. You, as budding CA's with RM as your elective (or specialization) have tonow upgrade your levels. You got to understand that ICAI'sstudy mat and mapping-sheet are now matters of the past and just a hoax now forth. Thesewouldn't help you on standalone basis now—that'sguaranteed. What's required of you now is that whatever topic you are doing-- alongwith in-depth knowledge of it,you got to keep an open mind about its concept—use your brain,general understanding &common sense involved in the topic--- be it regarding Risk Based Internal Audit, be it risk and control matrix(RCM), risk management strategies, reputation risk, governance risk, enterprise risk management, risk maturity of an organization or any other concept.

So this paper is causing a sea- change in the way in which Risk Management paper shall be set in future.

I have carried out a deep analysis of each & every Case Study-- provided multiple answers wherever there was a scope of ambiguity. It's a subjective paper and the answers are based on my judgement and are not provided by ICAI. As always, confusion arises (and will arise) when ICAI comes out with their suggested answers.

When they do, please look at them in detail and remember that ICAI's answers are supposed to be given more importance(even if it defies logic) than the answers that I have reproduced below.

Note:

- ✓ For Jan 21 exam, I will be sharing a number of insights in the coming days.
- ✓ Also, I have already announced fresh batches in both English and Hindi for RM to begin from 4th Jan Live at Home on the Ulurn Portal. These are obviously for the May 21 exams and beyond.



CA FINAL RISK MANAGEMENT NOV 20 PAPER ANALYSIS

Sanjay Sir's Comment

In the Risk Management revision class, which I took in June 2020, I had shared 2 case studies — the first—one was of a Bank which explored expansion by opening a number of branches. This case study is about an NBFC exploring expansion by opening a number of branches. I distinctly remember the schematized comments that were made on that YouTube video by people with vested interests regarding me teaching Non- ICAI stuff—hence, it is always expected that students of CA Final would have the maturity of judging my integrity, knowledge and vision based on my character displayed over the last 2 decades before falling prey to such vicious narratives.

Link of that class is reproduced belowin case you have not seen the same and gone through the two case studies, you should definitely do that now -

https://www.youtube.com/watch?v=5F2ey_n8PBY



Case Study 5: ALCON

Synopsis

- ALCON, Pune based NBFC having business of Rs.500 cr. planning expansion post COVID
- Next 5 year Business Target Rs. 1000 cr. And moving into Urban areas.
- Expansion involves significant Operational risk and hence, company hired a full-time CRO
- CRO advises application of Advanced analytics including AI and ML, but the board sceptical of Expected Return on such investment.
- CRO supports AI and ML in terms of making processes more efficient and playing a key role in ORM.
- CRO advises categorization of Operational Risks which requires strengthening of OR framework.
- Board and CRO intends to strengthen Cyber security framework
- Hitherto firm had outsourced number of Operations, but going forward management believes that the current levels of control may not be adequate post expansion.



Multiple Choice Questions

5.1. We have to choose the incorrect statement with respect to effective OR framework.

A is correct.

One can guess the answer from the designing of the language itself. It says – scenario analysis is **only** looking for rare catastrophic risk, but it does not push the participants outside their comfort zone.

First of all, scenario analysis looks at all scenarios – not only the rare ones. You can in fact look at a mention of those scenarios in **Pg. 5.11 and 5.12.** Moreover, even if the student fails to catch this and considers first part of the sentence to be correct, the second part of the sentence is inconsistent with the first part- if scenario analysis looks for rare catastrophic risk, it obviously pushes participants to think outside their comfort zone, because, rare catastrophic risks are outside their comfort zone.

Option B: Loss data tells us what has already happened and also to consider how to control and mitigate those risks in the future.

While an effective operational risk management framework drives to bring preventive measures as elucidated above, there is every possibility that some loss events do occur in an organisation. It is imperative to identify the losses as and when they happen, quantify them (both in financial and non-financial terms), and assess their short term and long term impact. This is normally followed by an assessment of the controls of the specific process / sub-process in which the event occurred.

Option C: Risk Control Self-Assessment (RCSA) allows us to identify all risks, not just those that have already materialized.

Page 9.10, section 4.2 first line states -

"RCSA is built on identification of **all** risks that could lead to an Operational Risk event".

Option D: A Key Risk Indicator (KRIs) predicts that a risk is changing and would allow for proactive intervention

KRI is continuous, robust and dynamic as explained in Page 9.21 of Section 8.



Sanjay Sir's Comment

Question is simple and straightforward. Even though I have mentioned above the respective pages, but frankly speaking, a well prepared student doesn't even require to go to those pages and would be able to guess the answer straightaway. But the whole point is — "A well prepared student!" — UKWIM

Average performance would have been good.



- **5.2.** It is clearly depicted in the diagram on Page 9.8 that ORM is the second line of defence. I had also put an audio on the same as a part of my 21 audios released prior to the exam. Just to re-iterate
 - **First line** of defence is the function/department/role that owns the process the Line Managers.
 - Second line of defence is the OR department which reports to the ORMC.
 - Third line of defence is Internal Audit which reports to the Audit Committee.

A link of the Audio Podcasts released prior to the exam is reproduced herein -

https://www.youtube.com/watch?v=6k3dQDcadcl&t=3s

Sanjay Sir's Comment

Once again, this is straightforward and it's a CRIME to commit a mistake here. Average performance would have been superb.



5.3. Since the write-up talks about concern of Cyber Risk, they had to put up an MCQ on the same. It's a silly MCQ which anybody can answer without any knowledge whatsoever. *For reference purpose*, it is covered in **Page 9.25.**

I think it would be great if you parallelly read a small article on

https://en.wikipedia.org/wiki/Bangladesh Bank robbery

Sanjay Sir's Comment

I don't think I need to mention anything else.

Average Performance would have been great.



5.4. This is a silly MCQ on Governance framework Operational Risk which is covered in Page 9.5 and the answer is anyways, common sensical. When you talk about Governance framework, it has to start from the top and hence, Culture and awareness (Option B) as created by the Top Management together with Policies and Procedures (Option C) will definitely form a part of it. Option A i.e. Governance is a part of the question itself. Hence, the answer is Option D i.e. all of the above.

Sanjay Sir's Comment

This is a poorly designed MCQ think it shows exhaustion on the part of the paper setter....... "bhai chorna complete karte hay!!!.

Average Performance would have been good.



5.5. This is a tricky question where we have to identify as to which risk is not a part of Operational Risk. I think the answer should be Option D as interest rate risk is a financial risk. However, confusion arises from the fact that in Page 9.11, they have mentioned certain risk types that often overlap or are caused by Operational Failures – financial risk is one of them. Still, I would go for Option D i.e. Interest Rate risk, as it is a type of Market Risk, while Option B i.e. Model Risk can be considered to be a part of failure of system covered in the definition of Operational Risk.

Sanjay Sir's Comment

The question is tricky and average performance would be average.



Descriptive Questions

5.6. A. This is a generic question on the difference between AI and ML which is not related to the Case Study write-up at all. Students will enjoy a free ride by copying from Page 9.33 to 9.35. ICAI solution would most probably do the same. I do not want to disturb the status-quo In this regard and therefore, I'm also copying the same.

Machine Learning

A standard software code is characterized by explicit rules that a computer is supposed to perform. In case, there is a change in the data / situation, a programmer needs to change these explicit rules. In contrast, a machine learning program dynamically responds to change in data / situation by changing the rules that govern the behaviour.

Machine learning, meanwhile, uses an inductive approach to form a representation of the world based on the data it sees. It is able to tweak and improve its representation as new data arrive. In that sense, the algorithm "learns" from new data inputs and gets better over time.

Techniques such as regression, support vector machines, and k-means clustering have been in use for decades. Others, while developed previously, have become viable only now that vast quantities of data and unprecedented processing power are available. Deep Learning and Reinforcement learning are good example of newly developed machine learning techniques.

At the most basic level, machine learning techniques can be divided into two primary groups:

- Supervised Learning
- Unsupervised Learning

Supervised Learning refers to the statistical analysis that aims to map the behaviour of a certain variable on the basis of some other variables. The principal aim of these methods is to fit a model that relates the set of independent variables to the dependent variable. The model in turn is largely used for future prediction of better understanding of



the relationship between the independent and dependent variables. Bulk of the machine learning methods such as linear regression, logistic regression, boosting, and support vector machines operate in the supervised learning domain.

Unsupervised Learning, as the name suggests, refers to statistical methods that aim to delve into the challenging realm of data that has no dependent or response variable i.e. there is no variable that supervises the behaviour of the algorithm. The primary aim of this kind of analysis is to understand the relationships between the variables or between the observations. One statistical learning tool that we may use in this setting is cluster analysis, or clustering.

Machine Learning methods can also be categorized on the basis of the nature of the variables handled. Regression methods primarily deal with variables that are quantitative in nature e.g. a person's age, height, or income, the value of a house, and the price of a stock. In contrast, Classification methods deal with qualitative variables i.e. variables that take on values in one of K different classes, or categories. **Examples** of qualitative class variables include a person's gender (male or female), the brand of product purchased (brand A, B, or C), whether a person defaults on a debt (yes or no), or a cancer diagnosis (Acute Myelogenous Leukemia, Acute Lymphoblastic Leukemia, or No Leukemia).

Artificial Intelligence

Artificial Intelligence is the science that makes intelligent machines especially computer programs. It is a way of making a computer in a similar manner the intelligent humans think.

It works by studying how human brain thinks and how humans learn, decide and work while trying to solve a problem, and then the outcomes of this study is used in developing intelligent software and systems. It has been dominant in many fields such as:

- Gaming It plays a crucial role in strategic games such as chess, poker etc.
- Natural Language Processing It is possible to interact with the



computer that understands natural language spoken by humans.

- **Expert Systems** There are some applications which integrate machine, software, and special information to impart reasoning and advising. They provide explanation and advice to the users.
- Vision Systems These systems understand, interpret, and comprehend visual input on the computer.

For example,

- Doctors use clinical expert system to diagnose the patient.
- Police use computer software that can recognize the face of criminal with the stored portrait made by forensic artist.

Al is also used in Speech Recognition, Handwriting Recognition, and Intelligent Robots etc.

Artificial Intelligence is dependent on large amounts of data. So proper big data architecture needs to be set up for AI that involves architecture like Hadoop clusters, Spark Clusters etc. So that the processing of the data is faster and smooth.

Sanjay Sir's Comment

Crux -

- Artificial intelligence computer systems are capable of performing tasks that traditionally required human intelligence at levels comparable (or superior) to those of human beings.
- Machine learning seeks to extract knowledge from large amounts of data by "learning" from known examples and then generating structure or predictions. Simply put, ML algorithms aim to "find the pattern, apply the pattern." Main types of ML include supervised learning, unsupervised learning, and deep learning.



B. Challenges a typical company like ALCON would face while implementing AI are :

Computing Power: The amount of power these power-hungry algorithms use is a factor keeping most developers away. Machine Learning and Deep Learning are the stepping stones of this Artificial Intelligence, and they demand an ever-increasing number of cores and GPUs to work efficiently. There are various domains where we have ideas and knowledge to implement deep learning frameworks such as asteroid tracking, healthcare deployment, tracing of cosmic bodies, and much more.

They require a supercomputer's computing power, and yes, supercomputers aren't cheap. Although, due to the availability of Cloud Computing and parallel processing systems developers work on AI systems more effectively, they come at a price. Not everyone can afford that with an increase in the inflow of unprecedented amounts of data and rapidly increasing complex algorithms.

➤ Trust Deficit: One of the most important factors that are a cause of worry for the AI is the unknown nature of how deep learning models predict the output. How a specific set of inputs can devise a solution for different kinds of problems is difficult to understand for a layman.

Many people in the world don't even know the use or existence of Artificial Intelligence, and how it is integrated into everyday items they interact with such as smartphones, Smart TVs, Banking, and even cars (at some level of automation).

Limited Knowledge: Although there are many places in the market where we can use Artificial Intelligence as a better alternative to the traditional systems. The real problem is the knowledge of Artificial Intelligence. Apart from technology enthusiasts, college students, and researchers, there are only a limited number of people who are aware of the potential of AI.



For example, there are many SMEs (Small and Medium Enterprises) which can have their work scheduled or learn innovative ways to increase their production, manage resources, sell and manage products online, learn and understand consumer behavior and react to the market effectively and efficiently. They are also not aware of service providers such as Google Cloud, Amazon Web Services, and others in the tech industry.

➤ Human-level: This is one of the most important challenges in AI, one that has kept researchers on edge for AI services in companies and start-ups. These companies might be boasting of above 90% accuracy, but humans can do better in all of these scenarios. For example, let our model predict whether the image is of a dog or a cat. The human can predict the correct output nearly every time, mopping up a stunning accuracy of above 99%.

For a deep learning model to perform a similar performance would require unprecedented finetuning, hyperparameter optimization, large dataset, and a well-defined and accurate algorithm, along with robust computing power, uninterrupted training on train data and testing on test data. That sounds a lot of work, and it's actually a hundred times more difficult than it sounds.

One way you can avoid doing all the hard work is just by using a service provider, for they can train specific deep learning models using pre-trained models. They are trained on millions of images and are fine-tuned for maximum accuracy, but the real problem is that they continue to show errors and would really struggle to reach human-level performance.

▶ Data Privacy and Security: The main factor on which all the deep and machine learning models are based on is the availability of data and resources to train them. Yes, we have data, but as this data is generated from millions of users around the globe, there are chances this data can be used for bad purposes..



For example, let us suppose a medical service provider offers services to 1 million people in a city, and due to a cyber-attack, the personal data of all the one million users fall in the hands of everyone on the dark web. This data includes data about diseases, health problems, medical history, and much more. To make matters worse, we are now dealing with planet size data. With this much information pouring in from all directions, there would surely be some cases of data leakage.

Some companies have already started working innovatively to bypass these barriers. It trains the data on smart devices, and hence it is not sent back to the servers, only the trained model is sent back to the organization.

The Bias Problem: The good or bad nature of an AI system really depends on the amount of data they are trained on. Hence, the ability to gain good data is the solution to good AI systems in the future. But, in reality, the everyday data the organizations collect is poor and holds no significance of its own.

They are biased, and only somehow define the nature and specifications of a limited number of people with common interests based on religion, ethnicity, gender, community, and other racial biases. The real change can be brought only by defining some algorithms that can efficiently track these problems.

▶ Data Scarcity: With major companies such as Google, Facebook, and Apple facing charges regarding unethical use of user data generated, various countries such as India are using stringent IT rules to restrict the flow. Thus, these companies now face the problem of using local data for developing applications for the world, and that would result in bias.

The data is a very important aspect of AI, and labeled data is used to train machines to learn and make predictions. Some companies are trying to innovate new methodologies and are focused on creating AI models that can give accurate results despite the



scarcity of data. With biased information, the entire system could become flawed.

Conclusion : Although these challenges in AI seem very depressing and devastating for mankind, through the collective effort of people, we can bring about these changes very effectively.

Sanjay Sir's Comment

ICAI study mat does not mention these challenges except a 3 line paragraph in page 9.3 reproduced below –

Artificial Intelligence is dependent on large amounts of data. So proper big data architecture needs to be set up for AI that involves architecture like Hadoop clusters, Spark Clusters etc. So that the processing of the data is faster and smooth.

Hence, I have reproduced the above points from a general google search. This goes to show that ICAI study mat is not at all sufficient to prepare for this exam. Questions that are asked require detailed knowledge of the topic which is not there in ICAI study mat.



C. Four areas where AI and ML can be applied by ALCON are:

- 1. Risk Management Applications using Big Data Analytics to produce a highly robust, comprehensive risk indicator and in Anti-Money Laundering (AML) Operations Found in Page 9.34
- 2. Natural Language Processing Found in Page 9.35
- 3. Expert Systems Found in Page 9.35
- 4. Vision Systems, Speech Recognition, Handwriting Recognition and Intelligent Robots Found in Page 9.35.

Sanjay Sir's Comment

Although I can give a much elaborate and comprehensive answer to this question, I resisted the temptation to do so and stuck with words and phrases in ICAI study mat.

A more comprehensive answer is reproduced below:

Areas in which ALCON, an NBFC can use AI and ML

Data analytics is an area new-age NBFCs have focused on acquiring customers or creating analytics models for credit risk. If an NBFC gets data on customer pain points or needs and wants to resolve it by adding a new product, **for example**, an EMI loan for say, smartphones, it is data analytics that will help it evolve the product. Candidates wishing to enter the workforce or those already employed in NBFCs should look at data analytics training to stay relevant. While some back-end jobs will vanish thanks to emerging technologies, new profiles will require a fresh set of skillsets and knowledge.



Debt management and risk modelling

Tools like eligibility calculators and apps help customers with managing debt and providing them with the best options to clear loans. Data analytics and AI are being leveraged to create tools for customers to manage debt. AI-based technologies can also help NBFC predict which customers are likely to default early on, thereby ensuring that risk costs are brought down. When algorithms predict and evaluate risks in real-time, the financial company saves costs and time. Artificial intelligence, as it turns out, has emerged as a game-changer for risk modelling. It also frees up time for agents and employees to think creatively and provide much-needed human insight.

> Trade finance

Trade finance is an area wherein financial companies/institutions offer credit such as short-term financing to ensure goods exchange on a domestic or international level. Many MSMEs need this kind of financing for exports and to compete at an international level. With MSMEs contributing 30 percent to the country's GDP, it is a sector that NBFCs can ill-afford to ignore. Typically, trade finance involves a lot of paperwork, and letters of credit are drawn up. The turnaround times (TATs) are long, and costs are high in traditional trade finance. Thanks to the deployment of technology and the presence of FinTech platforms, trade finance has now been transformed into digital financing. Digitisation has lowered TATs, making documentations real-time affairs for all stakeholders. Blockchain is also being considered an appropriate technology to adopt by NBFCs who deal with trade finance.

The current pain points in trade finance include delays in shipments because of several checks and points of communication, delays in payment owing to verifications and manual creation contracts, among others. In a blockchain empowered world, smart contracts ensure sharing of the sale agreement between exporter and importer, and the consecutive processes are all done through digital signatures, digital letters of credit, and generation of smart contracts at every stage.



Equity analysis

Digital technologies are also changing the face of equity analysis and research. Equity analysis, which essentially is about analysing several companies and sectors, and offering advice to fund managers or clients on the shares to pick, can benefit from machine learning and artificial intelligence. Social listening, the inclusion of chatbots (conversational AI) that can answer analyst queries, and data science to layout patterns all help in equity research and analysis. While AI and machines take over repetitive tasks, skilled analysts gain from richer insights and patterns to make more informed decisions.

Clearly, NBFCs have begun to march to the beat of technology. Automation, however, doesn't mean fewer jobs. It means the replacement of certain old jobs with newer profiles. Modern workforces need to upskill and reskill themselves to keep pace and step into the future. It is ideal that they empower themselves with knowledge of new technologies such as data analytics, artificial intelligence and machine learning to step into a world where it's no longer human vs machine but humans and machines.



5.7. A. No, I do not agree with the suggestion of the CRO. RCSA can be first implemented and then KRI may be introduced or vice versa.

KEY RISK INDICATORS AND SCENARIO ANALYSIS

As an organisation evolves from an elementary level of operational risk management to the next level, there is a need to monitor certain areas on continuous basis, by way of regular reports and exception triggers. While an RCSA hinges on the self-assessment at a point in time, the Key Risk Indicator (KRI) concept is more focused on continuous monitoring.

They are actually interrelated concepts. **For example**, in a manufacturing process, a half yearly RCSA check may be built on checking for number of batches failed in quality check; however a KRI may be a better method being a lead indicator, where batch failure numbers are reviewed every week rather than at longer intervals. Conversely, if a KRI exists for a process, an RCSA can be built using the KRI.

In an evolved internal control framework, there would be a robust KRI monitoring process.

In initial stage of an operational risk management implementation, when either a KRI or RCSA is not possible due to paucity of objective data or capability to analyse it, an organisation can use Scenario analysis as a surrogate mode. In a scenario analysis, the risk scenarios are described and a subjective assessment of the risk materialising is described, using whatever available data and reviews are possible to collate. Over time, this method has been gradually overshadowed by more objective methods like KRI monitoring (which is based on MIS), and RCSA (which is based on actual testing and/or uses the KRI as a base).



B. The acronym RCSA stands for Risk and Control Self Assessment – when a test step is tagged to each of the controls and management function performs that test, the exercise is known as RCSA.

It is a management function.

It differs from Control Assessment in the sense that Control Assessment is carried out by Internal Auditors while, RCSA is conducted by Management, of course with the help of Internal Auditors. Hence, RCSA has a deeper involvement of business line managers and process owners with a greater stress on accountability as compared to Control Assessment where, line managers are generally seen as examinees. So, you will find that the culture in RCSA vs Control Assessment is different. In RCSA, the culture is to "improve", while, in Control Assessment the culture is to "prove".

RCSA activity is to be done through an objective, quantitative review.

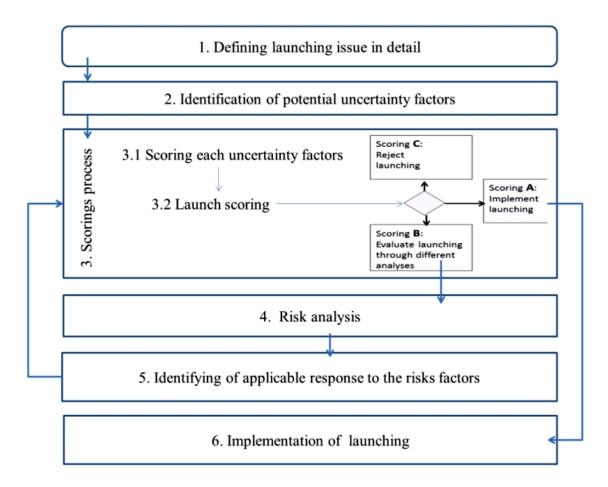
Methods of RCSA are -

- 1. Sampling, for example, using ICAI guidelines on Sampling logic.
- 2. Specific Affirmative/Negative Answers......it means questionnaires.
- 3. Other test steps



5.8. Launch risk may be defined as the 'uncertainty about and severity of the consequences of failed launching'. Although, there are several categories of risk involved in launching new products, Operational Risk is a major one as in the case of ALCON.

The following outline chart shows the framework to address Operational Risks while launching new products.



From an Operational Risk point of view,

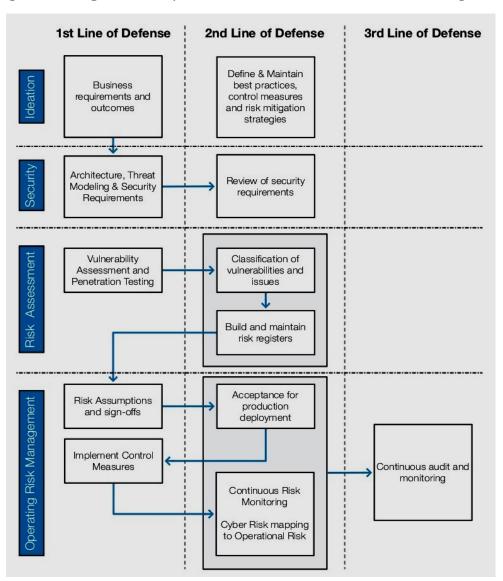
- 1. ALCON should carry out risk assessment of new products
- **2.** Set up policies and procedures. This in-turn involves establishing process notes, control steps and formalizing RCSA.



5.9. A. This is a difficult question – I feel any risk, including Cyber risk is the integrated responsibility of all the 3 lines of defence. How can they ask this question –

At what level of defence Cyber Security should be considered?

Obviously, Cyber Security should be considered at all the 3 lines of defence. The three lines of defence and an indicative set of interactions between these different functions for implementing a business solution as it goes through various phases are described below in the diagram.



If I have to still answer it, I'd put it into second line of defence as Cyber Security covers all business units and therefore is a part of ORM itself.



B. Recommendations to strengthen Operational Risk of ALCON

- **1.** Effective ORM governance comprising role of the board, ORM policy, ORM committee, lines of defence, process notes/standard operating procedure.
- **2.** Review and strengthening of Cyber Risk Management.
- **3.** Setting up RCSA, KRI and Operational Loss Data Management.
- 4. Setting up BCP and DRP

5. Managing Outsourcing Risk -

There are several specific aspects that need to be looked into Outsourcing Risk. Hiring of an outsourced vendor/service provider must cover the following aspects:

- Clearly defined objective of outsourcing; this has to be brought into the scope of work;
- Contractual documentation to be adequate to ensure the service provider does only what is assigned and to the standard mutually agreed to by all parties involved;
- Legal indemnities to the organisation to be assessed while hiring a service provider;
- ❖ In agreements where the client and the service provider are in different states or in different countries, the respective countries' or states' laws have to be complied with;
- The BCP of the service provider has to be reviewed.
- The operational risk assessment covering regulatory risks, financial risk, financial reporting risk and other risks as delivery to end customers of the client in case the service provider fails to deliver for whatever reason.
- If technology or its disaster recovery itself is outsourced, all the attention is required to ensure the business operations work as designed and agreed.



It is advisable for an operational risk manager to have an oversight of different department's adherence to the management of their respective outsourcing risks, and have it covered in their respective RCMs.

6. Operating Linkage between Units.