Utilization of External Data

(Augmenting top-down scenarios)

March 19, 2008

Hyakugo Bank, Ltd.

Operational Risk Management Section

FRONTIER BANKING

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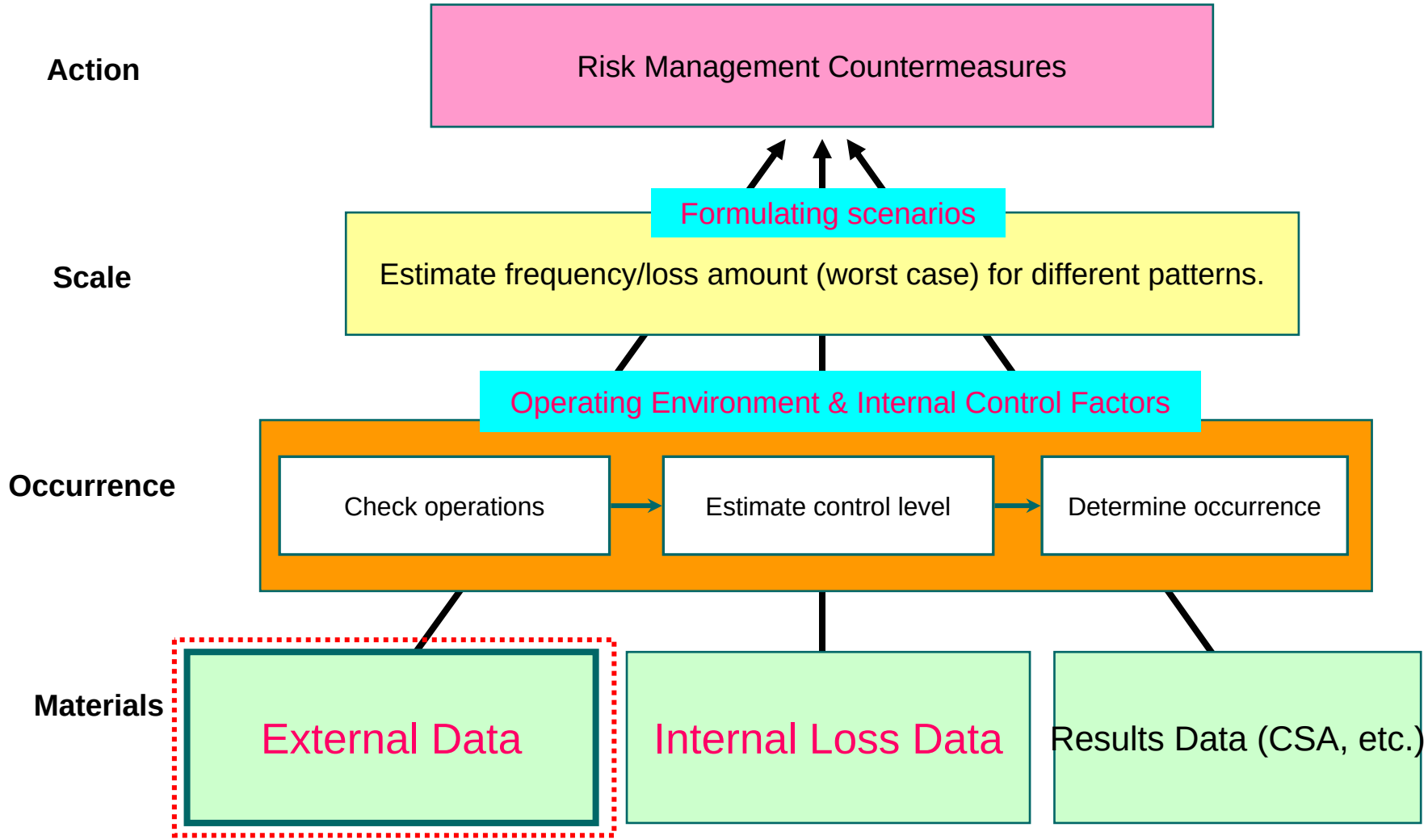
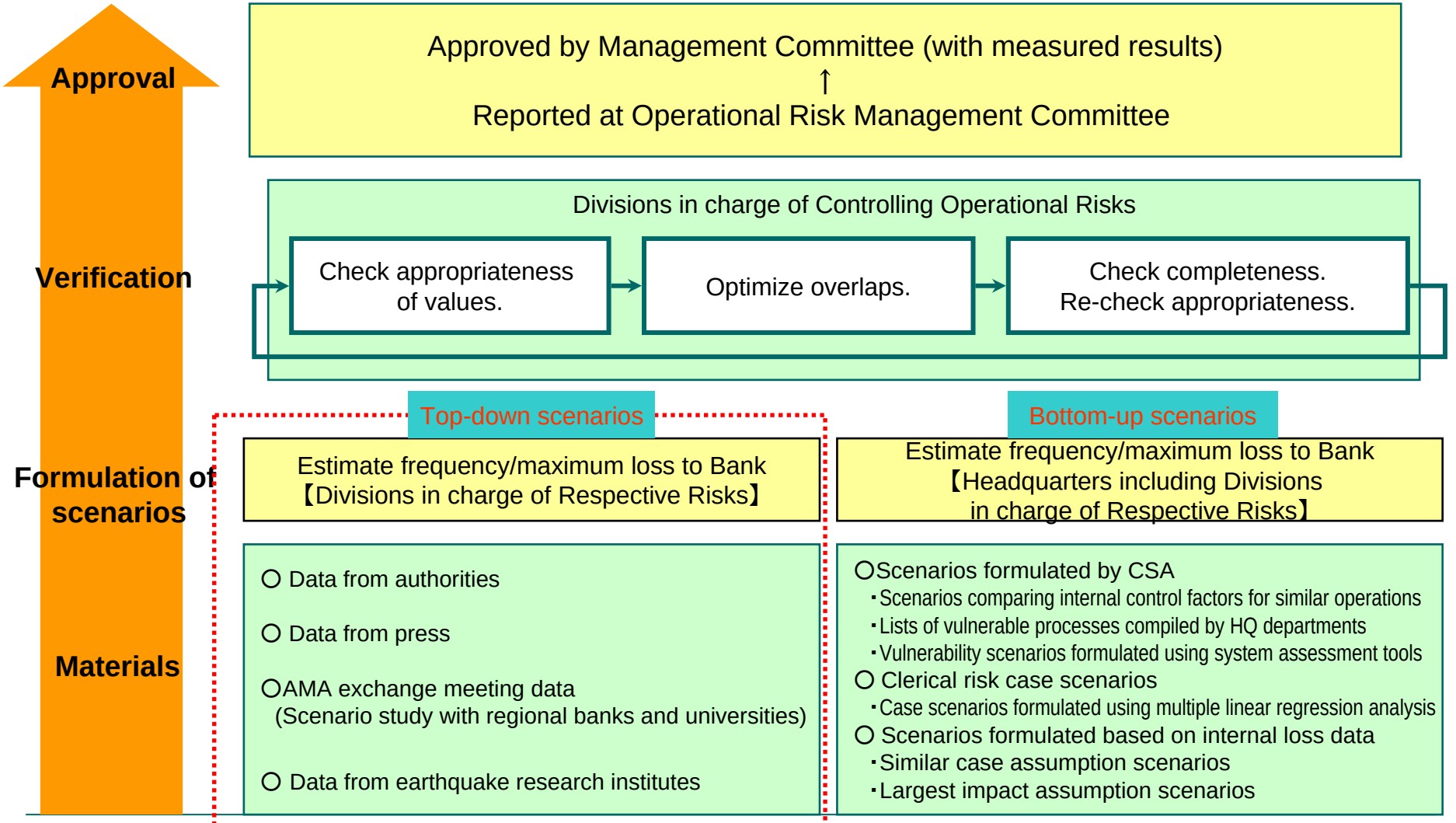
1 Collecting external data and formulating scenarios

(1) Process for using external data within the Bank



(2) Formulating scenarios （Overview)
- Top-down scenarios, bottom-up scenarios -



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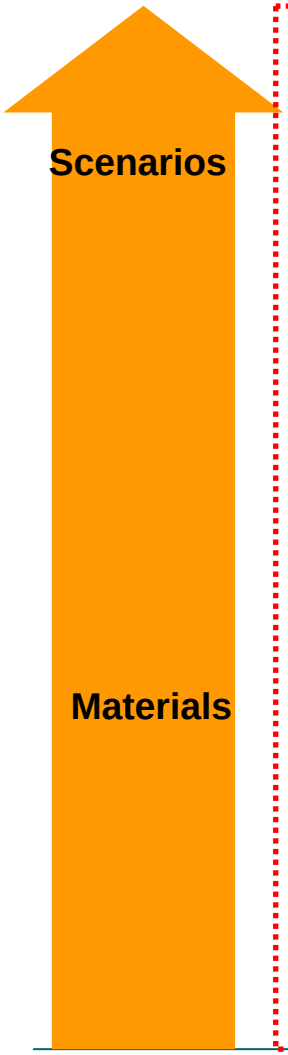
(3) Formulating top-down scenarios
Materials → Scenarios



Divisions in charge of Respective Risks
- Formulate a scenario every 6 months.
- Viewpoints:Occurrence at Bank and pattern
  Estimate frequency/loss amount (worst case) for different patterns.

Division in charge of Controlling Operational Risks
- Collect data every three months, record them in external data files and report to divisions in charge of Respective Risks

Data from Authorities

- FSA
  Administrative Disposition Cases
  Financial Inspection Findings
- BOJ
  Research papers
- Finance Bureau
  Administrative Dispositions to Financial Institutions
- JSDA
  Audit Findings

Press Data

- Internet information
  Press Data
  *including
  Local papers
  Magazines
  *including **foreign information**
- Newspapers
  General newspapers
  Trade papers

AMA Exchange Meeting Data

- Regional banks
  Information exchange: regional bank scenarios
  Information exchange: regional banks' internal data
- University Law Faculties
  Judicial precedents
  Pending disputes

Seismic Research Institute Data

Mie Pref. Local Disaster Preparedness
Anticipated Damage Report

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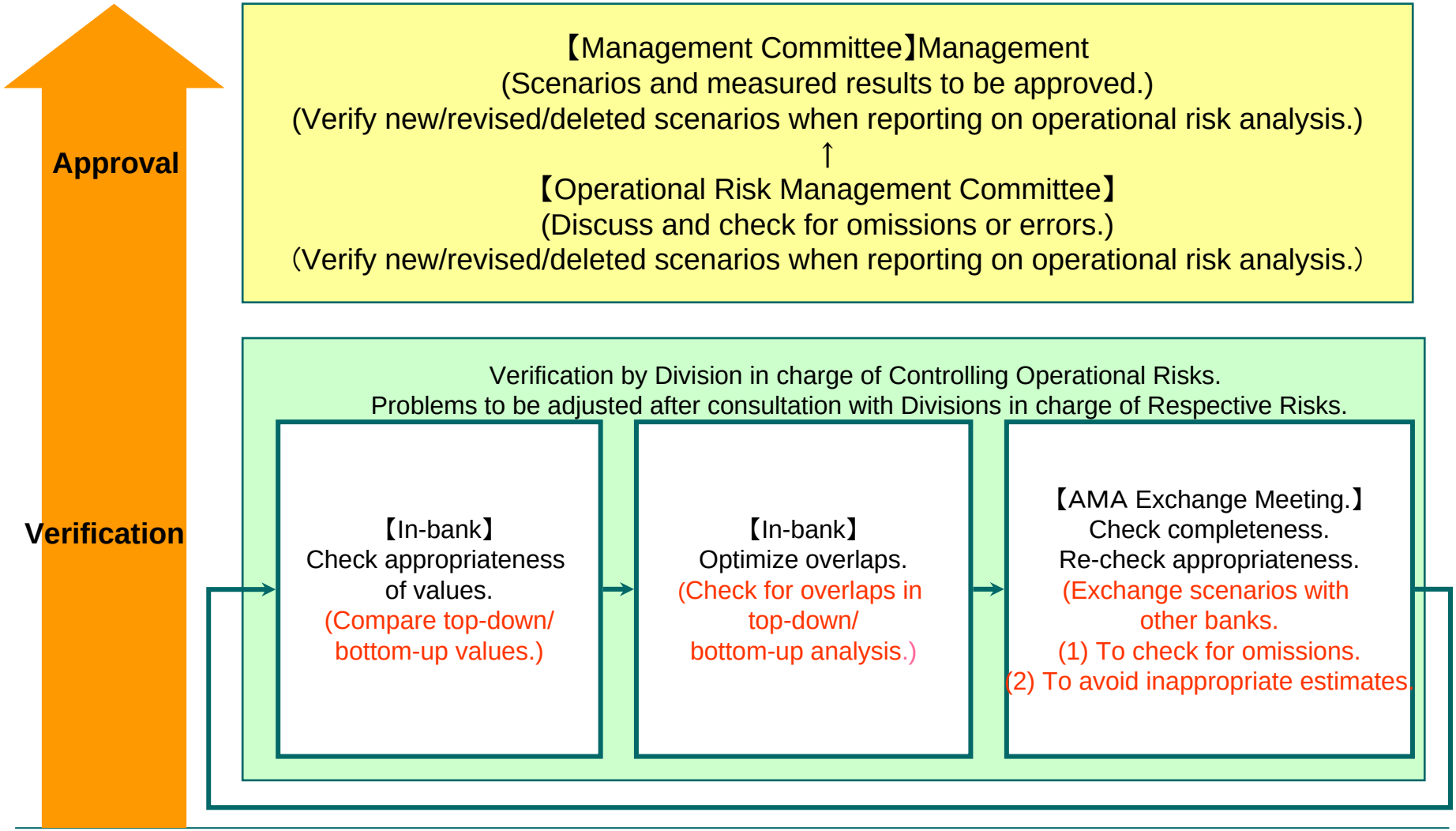
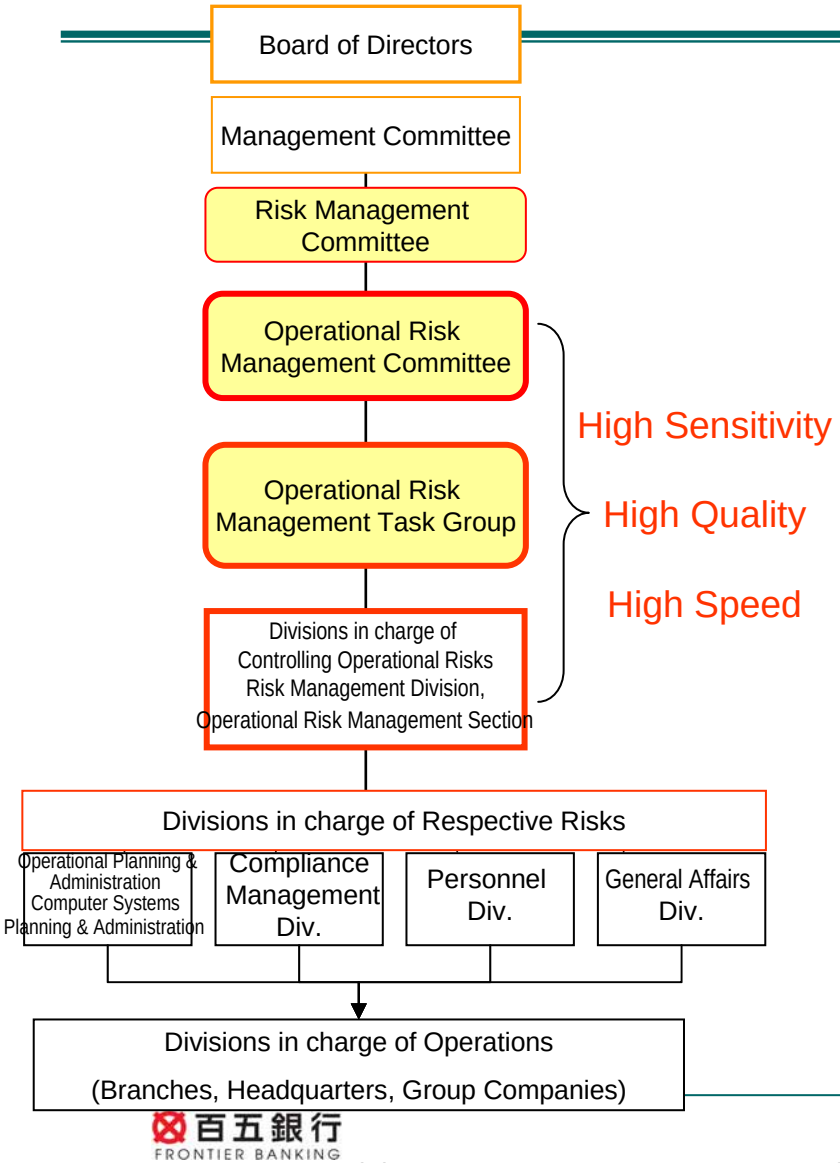
(4) Formulating top-down scenarios
Verification → Approval



(Reference) Bank's Operational Risk Management System



Deliberate and decide on Basic Policy. Check operational risk management.

Study and deliberate on the most important operational risk information.

Management to keep track of operational risk information

Report to and consult with director in charge of operational risk.

Manager-level, cross-functional deliberation focused on systems/strategies

Staff-level, cross-functional deliberation focused on important matters

Progress management and other verifications

Operational risk management framework based on comprehensive risk analyses

Quantitative operational risk analyses (quantification of total amounts, amounts by risk, etc.)

Monitoring (assessment of activities of and provision of guidance to divisions in charge of respective risks)

Report to and consult with director in charge of operational risks.

Whole bank-level CSA (collect risk events, assess, draw up and implement reduction measures and monitor.)

・Qualitative operational risk analyses. Implementation of risk reduction measures based on qualitative and quantitative risk analysis results.

・Formulate scenarios and implement measures.

Report risk events. Implement risk reduction measures. **Implement branch level CSA.**

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(5)AMA Exchange Meeting

Authorities DB

Press DB

Loss DB
(External Loss DB)

Scenario formulation

Verification

Scenario DB

Divisions in charge of respective risks
Divisions in charge of controlling operational risks

Operational Risk Management Committee/Task Group

AMA Exchange Meeting (information exchange with cooperating institutions) other regional banks, universities)

Internal Control Factors

Important ! ! !

Compare internal control levels.
(Check Bank's vulnerability.)

Check scenario completeness and appropriateness.

Adjust loss scale (frequency, amount).

Risk trend study, etc.

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(Reference) AMA Exchange Meeting (Regional Banks)

Purposes

・To improve scenario completeness so that no important events are overlooked.
・To refine scenario assessment so that impacts are assessed accurately.

Advantages

・By comparing the thoroughness with which banks control scenarios internally, the need to reduce risk can be established.・・・Management have a strong interest.
・By discussing internal loss data (in addition to scenarios), customer trends can be identified. ・・・Measures can be prepared in advance.
・By showing revised scenarios to other banks, omissions can be easily identified.
・・・No two banks will make the same omission.

Cases

・Embezzlement prevention・・・Random inspections of ATMs

(Reference) External events which may become a threat to the bank

・・・・・ Check adequacy through comparisons with other banks

Risk Type	Case	Details	Measures taken in Bank	Measures taken in other banks
Ethical Legal Risk	Failure to renew investment trust prospectus at branch	Selling investment trust without issuing a prospectus or using invalid prospectus not renewed (violates Security Exchange Law, which renders the contract invalid).	◎	◎
Internal Fraud	Unauthorized transactions (partner, product, limit not authorized)	【Other bank】Employee in charge of loans or external relations issuing a loan certificate without approval, causing difficulties when the loan is provided.	○	◎
Internal Fraud	Embezzlement of Bank's assets	【Many cases in other banks】 Clerks embezzling customers' deposits	○	○
Human Risk	Employee health and safety rules and employee compensation (for illness, death from overwork, injury, traffic accidents, etc.)	【Other bank】 Death from overwork recognized.	○	◎

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(Reference) Events that may become a threat to the Bank: Embezzlement

Perpetrator	Type	Modus operandi (cases)	Possibility of occurrence at Bank	Countermeasures
Manager	Embezzlement of cash for ATM (up to 100 million yen)	One person handled cash and maintained the ledgers. The ledgers had to be checked twice a month by a manager, but this safeguard was meaningless because the perpetrator handled all relevant tasks.	Possible	【Random】 **Random Inspections of ATMs** Cash handlers must be rotated.
	Embezzlement of cash for safe (up to 40 million yen)	Embezzlement was not detected because the requirement to have the amount checked by another person (besides branch manager) had turned into a formality.	Possible	【Regular】 Alternate inspection by branch manager or HQ staffs (or BS) **Regular surveillance through camera**
Clerk	Embezzlement of cash for ATM (up to 100 million yen)	One person handled cash and maintained the ledgers. The ledgers had to be checked twice a month by a manager, but this safeguard was meaningless because the perpetrator handled all relevant tasks.	Possible	【Random 】 【Regular】 Same as above
Loan officer	Embezzlement by means of padded loan	Loan officer approaching a customer who could not get a loan from other banks and receiving a “fee” for loan provision.	Impossible	None

There have been many cases of embezzlement by experienced clerks.

(Reference) AMA Exchange Meeting (University Law Faculties)

Purposes

・To analyze trends in pending lawsuits in order to provide scenarios that Japanese banks may face in future in a litigation-oriented society.
(Differences in internal loss characteristics between Japanese and foreign banks)

Advantages

・Learning about judges' treatment of laws and provisions and knowing how court decisions are made (process of elimination, overriding provisions, etc.)・・・ can evaluate strengths and weaknesses of Bank's internal control factors, and utilize these in risk management.
・Finding type of events where an increasing number of lawsuits have been filed even though damages have not been actually ordered ・・・ understand future threats and utilize these in risk management.

Cases

・Financial Instruments and Exchange Law ・・・ Over 400 lawsuits. Multiple visits are effective for the performance of new assignor protection obligations.
・Review of personal identification method・・・Points from lost lawsuits, increasing number of suits

（Reference）Cases worth noting: Personal Identification

Recently, cases in which banks have not received immunity from liability for personal identification where withdrawals have been made using stolen bankbooks and seals have been increasing. Mere verification of seals is not considered sufficient.

	Amount of Loss	Details	Points
A	6,000,000	A customer had his bankbook and seal stolen from his house. 8.5 million yen was withdrawn from his ordinary deposit account on the same day. On the next day, 6 million yen was withdrawn from his term deposit account. The court decided that Bank A should pay damages of 14.5 million yen. 【Judgment】 On the health insurance card that the person who withdrew the term deposit funds presented for personal identification was written "Born on the 1st day of June, 1st year of Showa." However, no such date existed, because the Showa era began on December 25, 1926. "The clerk at the window should have been aware that the 1st calendar year of the Showa era lasted for only a few days. The bank should have doubted the identification presented and used a more reliable personal identification method," the court pointed out, finding that there had been negligence on the part of the bank. As for the ordinary deposit, the court found that the seal registered at the bank had been used and that there was no negligence on the part of the bank in regard to personal identification. The court ordered the payment of 6 million yen for the term deposit.	Was the presentation of a personal identification document with photo requested? Did the clerk check the date of birth on the health insurance card against the person's appearance? Was the clerk aware of the problem with the era name?
B	16,000,000	A customer had his bankbook stolen from his house. A man withdrew 16 million yen from Bank B using the bankbook and a withdrawal slip with the registered seal on it. 【Judgment】 The court pointed out that "Since there have been many cases of fraudulent withdrawals made using stolen bankbooks, the bank was obliged to use a method of identification other than checking the seal impression." In addition, the name on the withdrawal slip was misspelled and the amount withdrawn was very high. The court found negligence on the part of the bank because "The bank should have had doubts and carried out a careful identification check such as by checking the secret code number," and ordered the payment of 16 million yen as claimed.	No misspelling of name, address, telephone number, etc. on the withdrawal slip?
C	1,070,000	A man in his 30s presented a term deposit certificate and demanded the payment of the balance (3.07 million yen). Bank C checked the seal impression on the back of the certificate against the registered seal, identified the man using the health insurance card and paid him 3.07 million yen. Bank C was sued for 1.07 million yen (3.07 million minus insurance coverage). 【 Judgment 】 The court found that "Since the man's signature was different from the signature registered with the seal, the bank had a duty of care to identify the man using a method other than a seal impression check. The bank failed to perform its duty of care because it had not checked the cash card secret code number, etc." and ordered Bank C to repay 1.07 million yen as claimed.	No difference between the signature on the withdrawal slip and the registered signature?
D	9,000,000	9 million yen was withdrawn from Bank D using a stolen bankbook, a forged seal and a forged health insurance card. 【 Judgment 】 " (1) The area code for City D on the withdrawal slip was wrong. (2) There had been no withdrawal at the window (ATM only)." If identity had been checked twice, there would have been no fraudulent withdrawal. The court ordered the repayment of 9 million yen as claimed.	No misspelling of name, address, telephone number, etc. on the withdrawal slip? Should have paid attention to the difference in the way the money was withdrawn.

(Reference) Bird's Eye View of Joint Research

Purpose: To anticipate future increases in risk from a compliance viewpoint and prepare necessary measures in advance.

Risks that Bank can recognize

Risk Event	Risk Amount
・Precedents in Japan ・Administrative sanctions	・Finalized damages ・Finalized fines

Risks that Bank cannot recognize

Risk Event	Risk Amount
・Lawsuits in Japan ・Foreign precedents	・Amounts claimed in Japan ・Initial fines in Japan ・Amounts claimed in foreign countries

Increasing risks recognized

Scope of Joint Research

Viewpoints extracted

Customer protection, entrustment, etc.

Extract and prioritize latent risks,
(Potential risks that the finance industry faces are to be estimated using Bank's internal control factors.)

Estimate impact of latent risks.
(Estimate future frequency/loss amounts through comparison of past and present, or of Japan and overseas.)

Study risk reduction measures.
(Revise agreements/procedures.)

(Reference) AMA Exchange Meeting--Prospects

Possibility of enlarging the data consortium

Enlargement is possible if financial institutions use not only quantitative but also qualitative methods, irrespective of the use of AMA

(1) It is desirable that there be an intention to utilize scenarios for risk reduction.

- Each bank responsible for completeness.
  →High level may be maintained in terms of quality& volume.
- All scenarios can be disclosed.
- All internal control factors can be disclosed.
- Internal loss data on past risk events can be disclosed.

(2) It is desirable that a permanent risk management system be established.

- Through regular reappraisals, inappropriate price setting can be avoided and high quality data can be maintained.
- Customer trends can be discussed.

*It is desirable that operational risk management systems do not differ in terms of quality and quantity.

Prospects

- Currently, few financial institutions can use qualitative methods.
- Currently, few financial institutions can disclose internal control know-how or scandals.

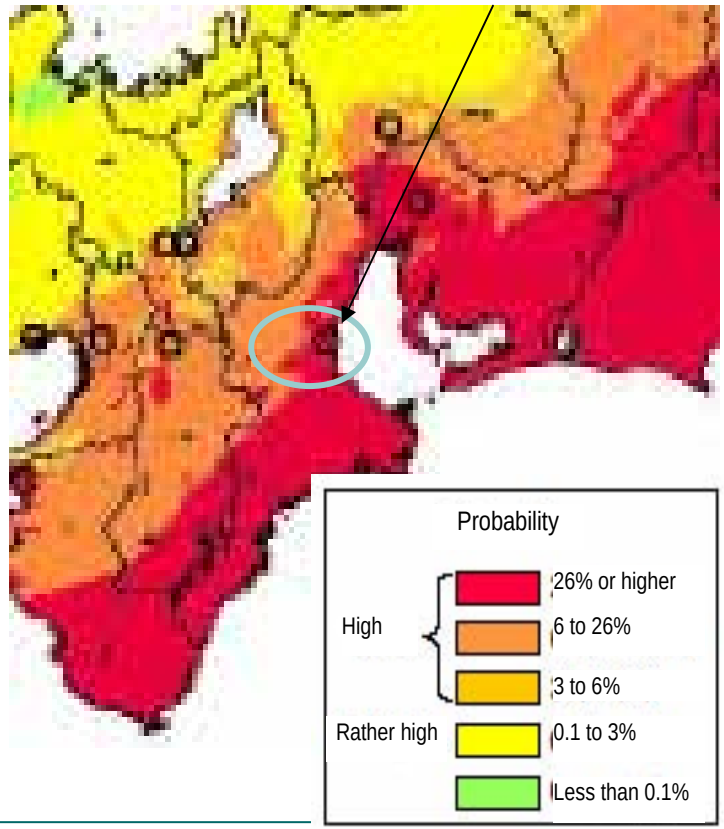
(How can banks disclose matters which are not disclosed to their own employees?)

(6) Earthquake Data

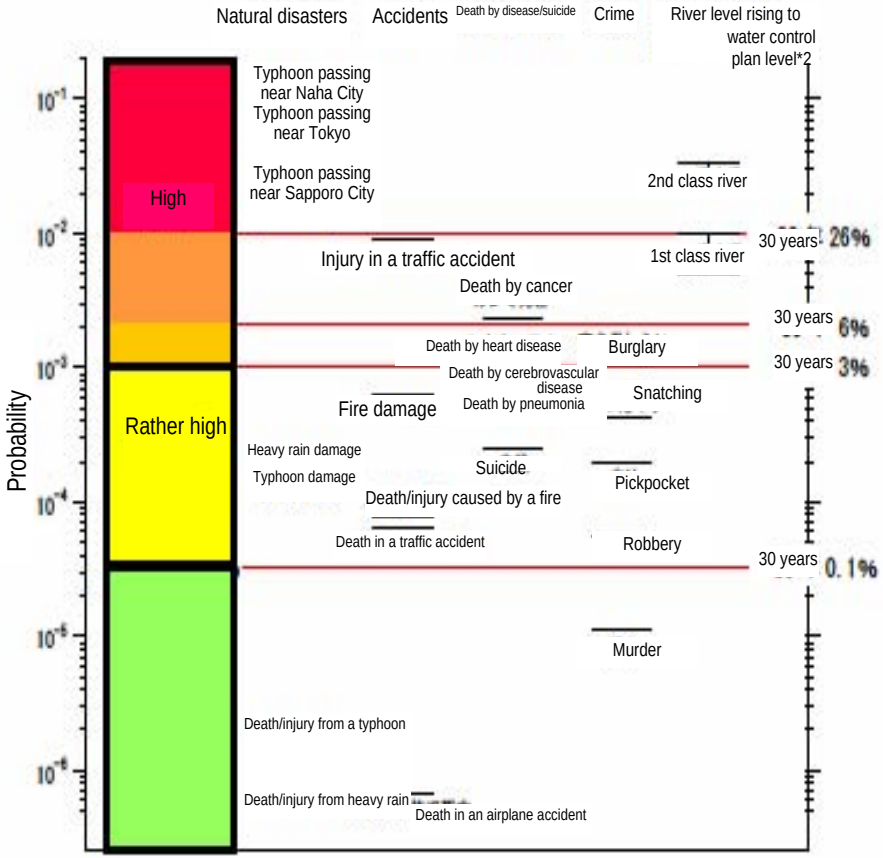
As for tangible asset risk (natural disasters, etc.), frequency data can be obtained to a certain degree.

The probability of Tsu City being hit by an earthquake with an intensity of 6 or higher is greater than the probability of being injured in a traffic accident, or dying from cancer.

The probability of an earthquake with an intensity of 6 or higher for the next 30-year period is 61. 3%.



Probabilities of Natural Disasters



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(Reference) Earthquake data (1)

Item	Description
Damage type	Building collapse/damage, damage due to furniture toppling over, personal injury, etc.: -from the shock of the earthquake -from liquefication -from tsunami flooding due to the collapse of banks
Risk measures	(1) Taking the softness of the ground into account: -when building a branch -geographical diversification of important assets
	(2)Quakeproofing -Meeting earthquake standards -Seismic retrofitting, securing equipments
	(3) Risk financing -Insurance

The frequency of natural disasters may be known, but prevention is not possible (except for fires). Countermeasures and impact scenarios (to calculate potential risk amount) therefore become important.

(Reference) Earthquake data (2)

Earthquake scenarios

1 . Seven scenarios including the Tokai, Tonankai and Nankai earthquakes from the “Mie Prefecture Local Disaster Prevention Plan Damage Prediction Report”

(1) Tokai, Tonankai, Nankai earthquakes (2) Tokai earthquake

(3) Nankai (a few hours after Tonankai) (4) Yoro-Kuwana-Yokkaichi dislocation

(5) Western part of Mt. Nunobiki eastern dislocation

(6) Eastern part of Mt. Nunobiki eastern dislocation (7) Tongu dislocation

2. Estimate the probability of each branch building being completely destroyed on the basis of the collapse rates calculated from the relationship between the number of years since construction, seismic intensity and liquefication scale during the Great Hanshin Earthquake.

3. Calculate the replacement value of each branch building and equipment plus the amount of compensation to be paid to employees injured by the collapse of the building. Statistically estimate the loss amount on the basis of this calculation.

Tsunami scenarios

1. Use the Tsunami Hazard Map (along with the earthquake scenarios) to estimate each branch’s degree of submersion.

Flood scenarios

1. Use the Flood Hazard Maps to estimate each branch’s degree of submersion.

＊ Business Interruption Risk due to an earthquake is to be separately treated and controlled.

(7) Important points on external data acquisition

Broad range

Data must be collected from a broad range of sources (Japan, overseas, every industry), without pre-selecting data sources.

Time series control

Data collected must be systematically treated on a time series basis, so that one event may not be misinterpreted as several events.

Matrix recording

Data must be recorded after indexing (categorizing and segmenting using vertical and horizontal axes) for risk analysis.

*Scenarios must be recorded in a database.

2 Utilization in internal controls

(1) Utilization in risk control management (analysis/assessment)

○ Operational risk analysis report (example)

Scenarios that may represent a threat to the Bank (UL)

Assess threat using measured unexpected loss.

Scenarios that suggest a need to strengthen internal controls (increasing frequency)

Pick up scenarios that occur frequently in other banks, or that lead to lawsuits. Study points in dispute to assess threats on the basis of the latest trends.

Scenarios that suggest a need to strengthen internal controls (increasing amount of loss)

Pick up on scenarios in which loss amounts or amounts claimed in litigation are increasing. Study future trends by means of time-series comparison and assess future threat.

(2)－1 Utilization in risk management (management through risk reduction objectives)

Management through risk reduction objectives

【Setting Objectives】

Divisions in charge of Respective Risks

Set quantitative and qualitative objectives to reduce operational risk during the current period.

- Quantitative objectives are set by selecting from among ULs (mainly measured by scenarios) and ELs (mainly measured based on manifested risks), for which risk reduction measures are required.
- Qualitative objectives are set by selecting from among events for which risk reduction measures are required but is difficult to set numerical objectives (ULs, ELs, etc.) For example, human risk (sexual harassment, death from overwork, etc.)

Division in charge of Controlling Operational Risks

This Division collects risk reduction objectives from the divisions in charge of the respective risks, calculates according to type of event, and sets the risk reduction targets.
The collected results are reported at the Operational Risk Management Task Group and to the director in charge of operational risk through the Operational Risk Management Committee, and final adjustments (including additional directions from management) are made.

Divisions in charge of Respective Risks

The adjusted results are included in the business plan. Clerical and information asset risks are set as internal control division commendation items for the divisions in charge of operations, and risk reduction targets are allocated.

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(2)－2 Utilization in risk management (management through risk reduction objectives)

Management through risk reduction objectives

【Progress Management】

Division in charge of Controlling Operational Risks

Quarterly : Progress in risk reduction measures is managed by the Operational Risk Management Task Group.

Half-year period: In addition to the above, an EL reduction interim report is made. The effects of measures implemented, if any, are reported back to Divisions in charge of Respective Risks.

Divisions in charge of Respective Risks

Receive the minutes of office management committees from the operation management division and utilize them in the management of risk reduction objectives.

【Assessment of Results】

Division in charge of Controlling Operational Risks

Assesses the achievement of quantitative and qualitative objectives and reports both through the Operational Risk Management Committee to directors in charge of the respective operational risks, and through the Risk Management Committee to management.

Divisions in charge of Respective Risks

Assess the achievement of objectives by operational divisions, and select the most commendable branches from an internal control perspective, giving them awards.

(Reference) The actual clerical, ethical, legal and information asset risk reduction environment

(1) Risk reduction methods

To reduce the amount of each risk significantly, the most effective way is to prevent frauds such as embezzlement, securities trading illegalities that may result in business improvement orders, and leaks of high-volume data. It is also important to reduce the types of risks for which losses are smaller but that have a large impact on customers and may damage the Bank's credibility (overt risks). Therefore, risk reduction measures must be carried out in a way that maintains a balance between overt and latent risks.

(2) Progress in Fiscal 2007 risk reduction objectives (examples)

・Clerical risks

Financing: Loans, Account Opening

【Objective】X yen reduction　【Estimated Reduction】Y yen　【Achievement Ratio】159%

・Information asset risks

Loss/misdelivery of important documents

【Objective】X yen reduction　【Estimated Reduction】Y yen　【Achievement Ratio】53%

Loss of important documents received from customers

【Objective】 Xyen reduction　【Estimated Reduction】Y yen　【Achievement Ratio】132%

・Ethical/legal risks

・Internal frauds: Embezzlement, especially from ATMs

* Because countermeasures will not reduce risk events to or near zero, qualitative objectives should be set forth.)

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(Reference) System Risks/Tangible Asset Risks

(1) How to reduce system risks

Calculate risk amounts by system, using system risk assessment tools. Focus risk reduction measures on systems in which risk amounts are larger.

(2) Progress in Risk Reduction Objectives in Fiscal 2007 (examples)

・External Systems (confidentiality of the system assessment tool improved.)
【Objective】X%→Y%　【Track Record】Z%　【Achievement Ratio】100.3%

・Caster OCR Input Account Settlement System (confidentiality of the system assessment tool improved.)
【Objective】X%→Y%　【Track Record】Z%　【Achievement Ratio】100.0%

(1) How to reduce tangible asset risks

The risk of buildings collapsing in an earthquake is very high. Seismic retrofitting will reduce this risk substantially.

(2) Progress in Risk Reduction Objectives in Fiscal 2007 (examples)

Conduct quake resistance tests. If seismic retrofitting is necessary, proceed to prevent collapse.
・A Branch【Objective】X yen reduction【Estimated Reduction】Y yen【Achievement Ratio】100%　Newly built in 2007
・B Branch【Objective】X yen reduction【Estimated Reduction】Y yen【Achievement Ratio】 0%　Quake resistance tested

* Shelves and other equipments have been promptly adjusted (quake-resistant) in 19 branches.

(Reference) Human Risks

(1) How to reduce human risks

Countermeasures will not reduce human risk events to or near zero. There will still be some litigation about hiring or dismissal, death from overwork, occupational depression, etc., so it may be difficult to reduce the level of risk. If the Bank fails to notice risk events and does nothing for a long time, negligence on the part of the Bank will be established and the amount of damages will be greater. The early detection of threats and the rapid implementation of measures to respond to them are important in reducing risk.

(2) Progress in Risk Reduction Objectives in Fiscal 2007 (examples)

・Prevention of death from overwork

・Prevention of problems regarding wages, benefits and evaluations

* Countermeasures will not reduce human risk events to or near zero. Because it may be difficult to reduce the level of risk, no quantitative objectives are set. Risk reduction (progress and implementation status) is assessed using qualitative objectives.

(3) Important points in scenario assessment

Setting frequency

For ethical/legal risks and human risks, collect data from all industries and use high frequency data.
As for earthquakes, use the latest research data.

Setting loss amount

Use the greatest loss amount after taking into account the loss amounts for all types of potential losses, which may caused by Bank's internal control factors.
As for damages, take into account increases due to changes in lawsuit Environments, and trends in foreign countries to forecast future losses.

Considering rumor risk

Frequency and loss amount are not sufficient. It is necessary to consider the Bank's circumstances and estimate the level of rumor risk if a scenario is realized.

3 Future discussions in formulating scenarios

(1)－1 More accurate values for scenarios

More accurate frequency

【Loss Amount】
It is comparatively easy to increase the accuracy of the maximum loss estimate for each scenario.
・Cost of branch office reconstruction
・Maximum trade value by operation
・Handling limit for customer assets per staff
・Volume of information by system
・Maximum amount of damages awarded in trials by keyword
Example: Stress? Fear?
No accountability? Failure to check compatibility?

【Frequency】
However, it is extremely difficult to estimate the frequency of a scenario.
・Frequency of internal frauds
= number of occurrences in all banks ÷number of banks?
・An event set to occur every 10 years may occur once every 9 years?
or will it occur by every 11 years?

(1)－2 More accurate values for scenarios

What we have done

(1) Check consistency between scenarios using a paired comparison test result table.
(2) Check consistency with values from other banks' scenarios at AMA Exchange Meetings.
(3) Check events that have occurred in other banks at AMA Exchange Meetings.

* Re-check with the impact on the total volume given by the calculation model.

Future discussions

(4) Increase the number of member banks at AMA Exchange Meetings for more accuracy.
(5) With the number of scenarios increasing, it is necessary to find new and effective method to take the place of the paired comparison test.

- Thank you for your attention.

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