March 2019

Global
Practice Analysis Report

About GARP

The Global Association of Risk Professionals is a non-partisan, not-for-profit membership organization. GARP offers risk certification — the Financial Risk Manager (FRM®) and Energy Risk Professional (ERP®) — and educational programs for professionals at financial institutions, government agencies, central banks, academia and corporations. Through the GARP Benchmarking Initiative and GARP Risk Institute, GARP sponsors research in risk management and promotes collaboration among practitioners, academics and regulators to promote a culture of risk awareness.

Founded in 1996, governed by a Board of Trustees, GARP is headquartered in Jersey City, NJ, with offices in London, Washington, D.C. and Beijing.

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Introduction

The GARP Global Practice Analysis is based on a triennial survey of financial risk managers that investigates who they are, where they work, what they do and how they do it — specifically, the skills and knowledge they need to perform their risk management responsibilities.

Survey findings inform the development of FRM Exam content and curriculum, direct GARP Continuing Professional Development initiatives and suggest themes for relevant GARP offerings for Chapter meetings, the GARP Risk Convention, webcasts and other educational outreach programs.

The Global Practice Analysis survey is overseen by the GPA Advisory Committee. GARP has completed three GPA surveys since 2011, resulting in a rich resource for identifying and examining trends in the practice of financial risk management.

The most recent GPA survey, administered in 2017, was completed by 3,210 qualified risk management professionals in 125 countries, more than half of them FRMs.

TODAY'S FINANCIAL RISK MANAGERS

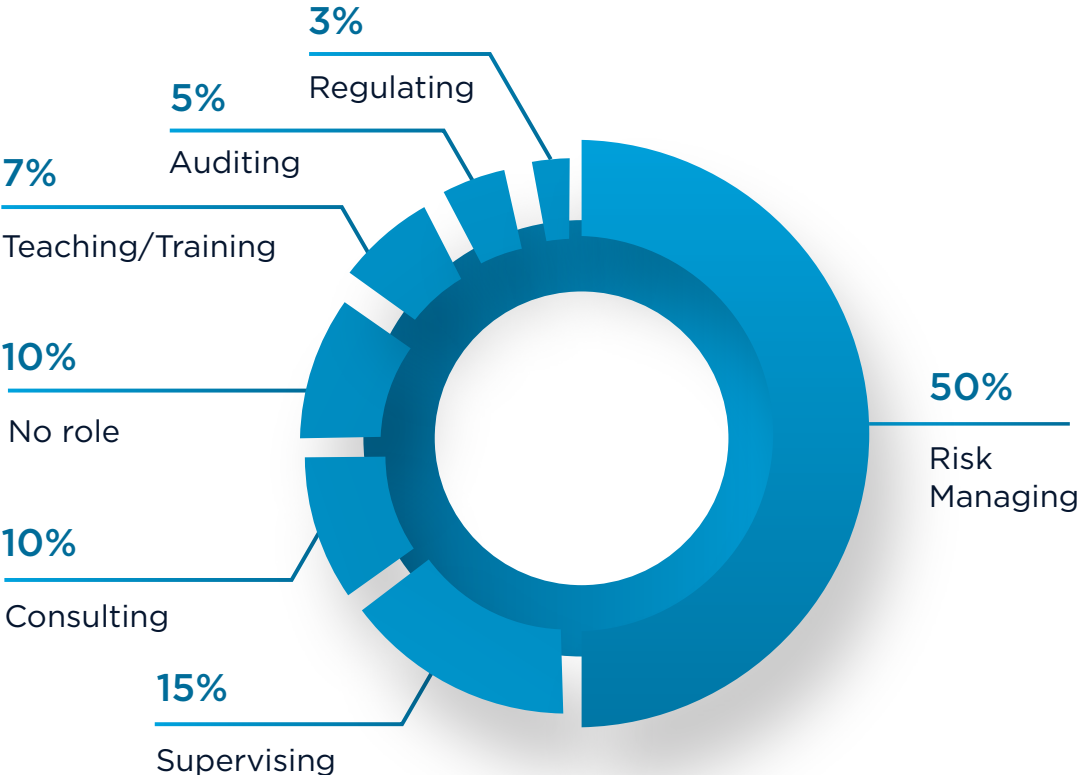| Have market and credit risk management skills | Identify and act on organizational threats | Are best positioned for estimating risk exposures | Communicate relevant findings and recommend strategic options to stakeholders | Understand risk management as an integrated system of processes |

Who Risk Managers Are

Survey participants indicated they are involved in the daily practice of financial risk management as financial risk managers, in supervisory roles, as consultants, academics and trainers, auditors and regulators. They self-identified as highly educated — 71 percent hold a Master's degree or higher. While 61 percent of respondents had more than five year's experience in the financial services industry, less than half — 41 percent — had more than five year's experience in financial risk management. This indicates that experienced financial services professionals enter the field of risk management from other areas of responsibility at financial institutions.

More than 40 percent of respondents worked at banks, with consulting and asset management firms employing 17 and 16 percent, respectively. Approximately one-third of respondents hold the title of risk manager, one-quarter are analysts and 11 percent are consultants. Approximately 61 percent are employed at firms with more than 1,000 employees.

PERCENTAGE OF RESPONDENT TIME SPENT IN RISK MANAGEMENT ACTIVITIES

3%
Regulating

5%
Auditing

7%
Teaching/Training

10%
No role

10%
Consulting

15%
Supervising

50%
Risk Managing

Types of Risk Roles

Thirty percent of respondents identified as generalists; the remaining 70 percent identified as specialists who spend at least half of their time in one of the following areas:

• **Credit** • **Market** • **Operational** • **Liquidity and Treasury** • **Enterprise**

As respondents gain experience in the industry, the percentage of time spent supervising, teaching or training, rises and time spent on risk management tasks decreases.

ACTIVITY BY EXPERIENCE LEVEL

- perform financial risk management tasks
- supervise people who perform financial risk management tasks

What Financial Risk Managers Do

PROCESS-BASED DOMAINS AND TASKS

Financial Risk Frameworks	9 tasks
Financial Risk Identification	5 tasks
Financial Risk Measurement and Modeling	12 tasks
Financial Risk Monitoring	7 tasks
Financial Risk Management	10 tasks
Financial Risk Reporting	6 tasks

ALL 49 TASKS
WERE FOUND TO BE IMPORTANT ON THE 4-POINT IMPORTANCE SCALE

The GARP GPA survey addressed 49 specific tasks across six process-based domains. Respondents were asked to assign an importance rating from 1 (not important) to 4 (extremely important) to each task.

Significantly, all 49 tasks were found to be important on the 4-point Importance Scale, meeting the industry best-practices threshold of 2.5 out of 4. Forty-seven of the 49 tasks received a mean importance rating of at least 3.0, indicating that these tasks are considered of moderate to high importance to the work of financial risk managers.

The top five tasks identified by respondents as **most important**, earning a mean importance rating of at least 3.3 among all survey respondents, are to:

1. Identify signs of potential risk based on exposure, trends, monitoring systems, regulatory and environmental change, organizational culture and behavior.
2. Analyze and assess underlying risk drivers and risk interconnections.
3. Communicate with relevant business stakeholders.
4. Monitor risk exposure in comparison to limits and tolerances.
5. Evaluate materiality of risk and impact on business.

The five tasks identified as **least important**, with a mean importance rating of or below 3.0 among all respondents, are:
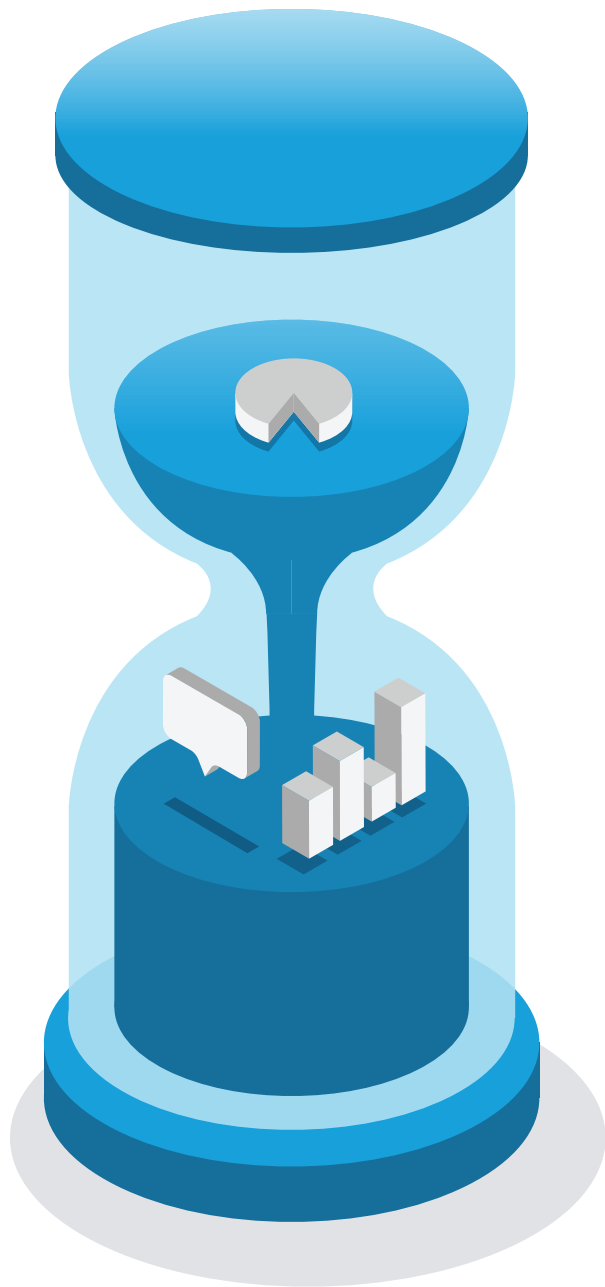
1. Create and inventory of models.
2. Generate, validate, and communicate standardized risk reports for external purposes.
3. Develop transparent model documentation for independent replication/validation.
4. Set capital allocations and risk budgets in accordance with risk management framework.
5. Recommend policy revisions as necessary.

Respondents were asked to identify at what level of experience each task should be part of the financial risk manager's profile, according to a five-level Experience Scale:

- Not necessary
- Less than 2 years
- 2 to 5 years
- 6 to 10 years
- More than 10 years

One-half of respondents indicated that financial risk managers should be able to perform all 49 tasks within the first five years of practice.

Top Tasks at the Five-Year Experience Level

More than 77 percent of respondents said financial risk managers should be able to perform these specific tasks within their first five years of practice in financial risk management:

- Monitor risk exposure in comparison to limits and tolerances
- Define and determine type of risk (e.g., credit, market, operational) by classifying risk factors using a consistent risk taxonomy
- Gather quantitative data to perform model evaluation
- Select monitoring methods and set frequency (e.g., intra-daily, daily, weekly, monthly)
- Gather qualitative information to perform model evaluation
- Generate, validate, and communicate standardized risk reports for internal purposes (e.g., staff, executive management, board of directors)
- Identify risk owners
- Investigate why limits are exceeded by performing root-cause analysis
- Analyze and assess underlying risk drivers and risk interconnections
- Escalate breach when limits or alert levels are exceeded according to risk management plan/policies/strategies
- Generate, validate, and communicate ad hoc reports to meet specific requirements
- Escalate unusual behavior or potential risks according to risk management plan/policies/strategies

Skills and Knowledge Areas Financial Risk Managers Need

Knowledge necessary to the practice of financial risk management was segmented into two categories of foundational and non-foundational content.

Foundational knowledge comprises those topics required of a financial risk manager regardless of specialization (e.g., credit risk, market risk).

Non-foundational knowledge is linked to specific areas of expertise or concentration. Respondents evaluated 174 knowledge statements across 10 foundational and 5 non-foundational content areas.

RESPONDENTS USED THE

1-TO-4 IMPORTANCE SCALE
TO RATE EACH KNOWLEDGE POINT

As before, respondents identified all 174 knowledge statements as significant on the 4-point Importance Scale, meeting the industry best practices threshold of 2.5. Of the 147 knowledge areas, 89 received a mean importance rating of 3.0, indicating moderate-to-high level of importance to the work of financial risk managers.

KNOWLEDGE CONTENT AREAS

FOUNDATIONAL KNOWLEDGE	89 KNOWLEDGE STATEMENTS TOTAL
Overview of financial risk management	4 statements
Asset classes and financial instruments	12 statements
Institutional Framework of Markets	5 statements
Regulatory Environment	4 statements
Accounting	9 statements
Economics	8 statements
Statistical and probability analysis/econometrics	9 statements
Financial mathematics	24 statements
Modeling	10 statements
Technology	4 statements

NON-FOUNDATIONAL KNOWLEDGE	85 KNOWLEDGE STATEMENTS TOTAL
Market Risk	12 statements
Liquidity and Treasury Risk	17 statements
Credit Risk	27 statements
Operational Risk	17 statements
Enterprise Risk	12 statements

Most and Least Important Knowledge

The five foundational knowledge areas rated as most important across all survey respondents:

1. Basic risk types (e.g., market, credit, operational)

2. Interest rates, foreign exchange rates, inflation and deflation

3. How risk management can add value

4. Market participants (e.g., banks, insurance companies, funds)

5. Case studies/ Lessons learned

The five foundational knowledge points considered least important among all survey respondents:

1. Alternative and emerging investment (e.g., art, litigation settlement, bitcoin)

2. Taxes in a risk management context

3. Insurances policies and annuities

4. Contingent claims analysis

5. "Soft" artificial intelligence for risk measurement and management purposes

The five non-foundational knowledge points rated as most important among survey respondents:

1. Market risk drivers (e.g., exchange rates, interest rates, equity, liquidity)

2. Scenario and stress analysis

3. Credit risk drivers (e.g., macro-economic conditions, industry conditions)

4. Valuation risk (e.g., market price uncertainty, model risk, concentration)

5. Models for market risk (e.g., VaR, LVaR)

The five non-foundational knowledge points rated as least important among all survey respondents:

1. Operational loss distribution models (e.g., Pareto, EVT, power law)

2. Use of insurance contracts to mitigate operational risks

3. Commodity features (e.g., contango, backwardation, cost of carry)

4. Operational risk capital (backward and forward looking)

5. Funds transfer pricing model

IMPORTANT KNOWLEDGE FOR NEW FINANCIAL RISK MANAGERS

Over 85% of respondents said the following knowledge should be acquired within the first five years of practice:

- Market risk drivers (e.g., exchange rates, interest rates, equity, liquidity)
- Basic risk types (e.g., market, credit, operational)
- Foreign exchange
- Discount rates (e.g., LIBOR, OIS)
- Short term funding instruments (e.g., repos, commercial paper)
- Equity

- Collateral
- Bonds (e.g., sovereign, corporate, municipal)
- Limits (e.g., exposure limits, concentration limits)
- Retail and commercial deposit products
- Market participants (e.g., banks, insurance companies, funds)
- Valuation risk categories (e.g., market price uncertainty, model risk, concentration, unearned credit spreads)

Top Knowledge by Specialty

Foundational knowledge scores were consistent across all specializations (market, credit, liquidity and treasury, operational, and enterprise), at about 3.0. This validates the knowledge in the Global Practice Analysis identified as core to risk management, regardless of specialization.

Not surprisingly, the data indicates a bias for one's own area: specialists consider the knowledge in their own areas to be the most important to their own work. For example, those who work in market risk indicated that knowledge of market risk is most important, and those who work in credit risk found that knowledge of credit risk is most important.

Because of the preponderance of market and credit risk specialists responding to the survey, the top knowledge points rated as most important reflect these two areas. To give a more balanced view, here are the results broken out by area of specialization.

Credit Risk
- Credit risk drivers (e.g., macro-economic conditions, industry conditions, company or individual-specific conditions)
- Limits (e.g., exposure limits, concentration limits)
- Measures of portfolio credit risk (e.g., expected loss, unexpected loss, concentration)
- Measures of individual exposure credit risk (e.g., probability of default, exposure at default, loan-to-value ratio, scorecards)
- Measures of counterparty credit risk (e.g., expected exposure, potential future exposure)

Market Risk
- Market risk drivers (e.g., exchange rates, interest rates, equity, liquidity)
- Scenario and stress analysis
- Models for market risk (e.g. VaR, LVaR)
- Valuation risk categories (e.g., market price uncertainty, model risk, concentration, unearned credit spreads)
- Swaps, swaptions, futures, and forwards

Operational Risk
- Compliance risk
- Categories and sources of operational risk (e.g., people, processes, systems)
- Risk and control self-assessment
- Reputational risk
- Key risk indicators — selection and monitoring
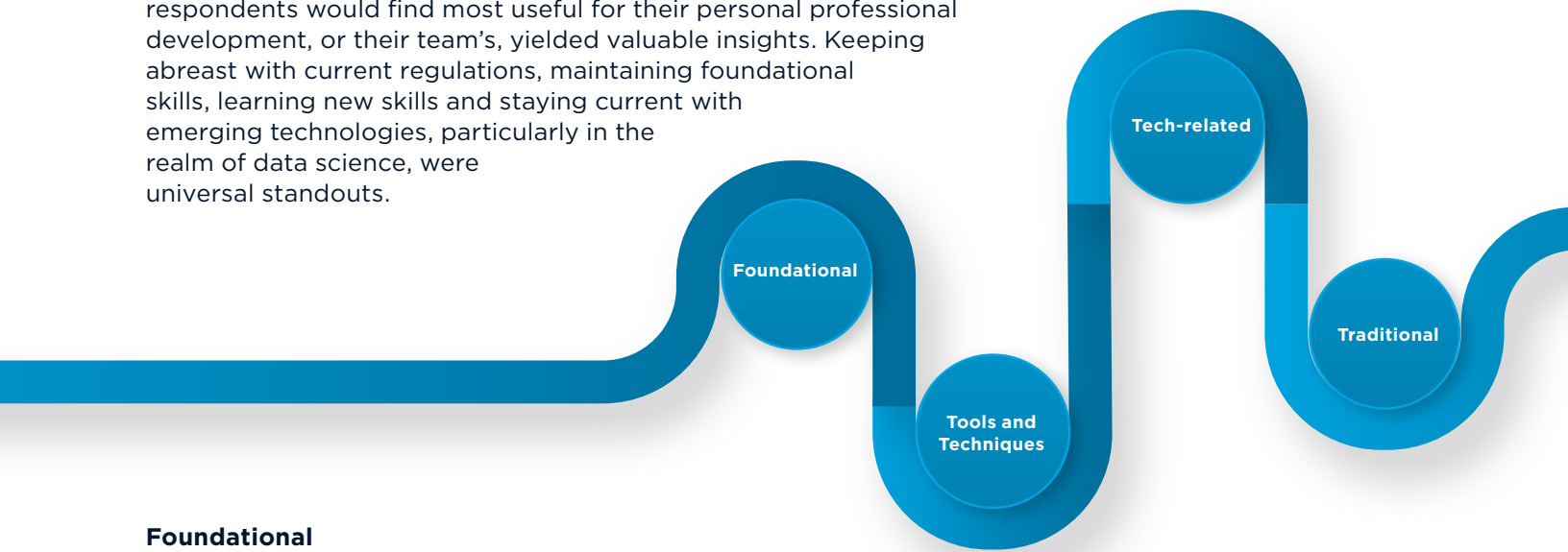
Liquidity and Treasury Risk
- Asset liquidity
- Sources of liquidity risk (e.g., market-driven, customer-driven, company-specific, maturity mismatch)
- Measures of interest rate risk
- Cashflow modeling and analysis
- Funding stability

Enterprise Risk
- Risk policies and limits framework
- Risk governance framework (e.g., 3 lines of defense, segregation of duties, independent oversight)
- Building risk aware culture
- Role of risk management in organizations
- Risk appetite definition and implementation

Education and Training

GPA survey questions about the education/training offerings respondents would find most useful for their personal professional development, or their team's, yielded valuable insights. Keeping abreast with current regulations, maintaining foundational skills, learning new skills and staying current with emerging technologies, particularly in the realm of data science, were universal standouts.

Foundational
- Accounting
- Quantitative/statistical skills
- Regulations (CCAR, IFRS 9, FRTB)
- Derivatives (pricing, valuation, strategies, risks, accounting)

Tools and Techniques
- Risk modeling
- Scenario analysis
- Hedging (strategies, techniques, accounting)
- VaR

Tech-related
- Computer languages (R, Python, VBA, SAS, Matlab)
- Cyber risk management
- Data science (AI, ML, Big Data, etc.)
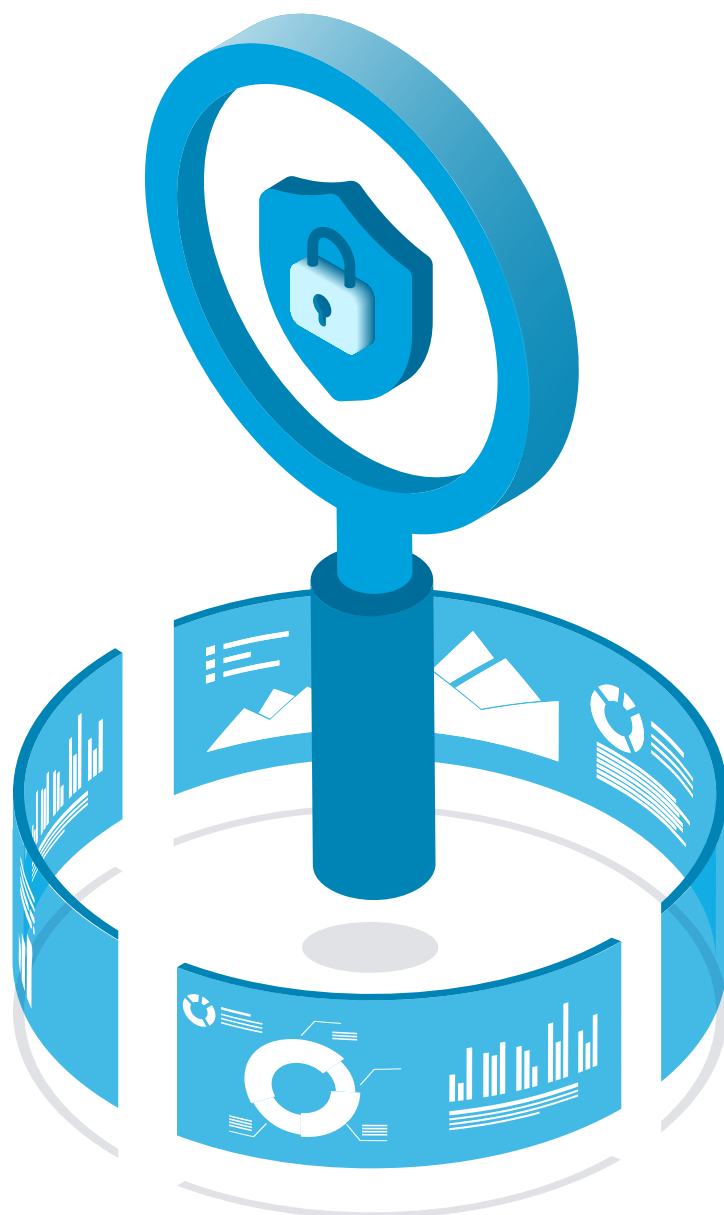- FinTech
- Blockchain

Traditional
- Market risk
- Interest rate risk
- FX risk management
- Liquidity risk (measurement, management, modeling)
- ALM
- Credit risk (modeling, management)
- Counterparty credit risk
- XVA
- Operational risk
- ERM
- Risk governance
- Risk appetite framework
- Compliance
- Conduct risk

GPA Trends 2017 Versus 2014

Because GPA surveys are developed to reflect current risk management practices, skills and knowledge requirements, there is considerable variation in the specific items presented to respondents for review and evaluation each time it is administered.

However, GARP certification and education professionals who oversee the creation, administration and analysis of the GPA survey have a long-term perspective, and note that the specific areas of risk management practice that gained traction in 2017 in interest and relevance over the previous 2014 results include:

- Cyber risk management
- Big data, machine learning and artificial intelligence
- Fintech
- Liquidity and Treasury Risk Management
- Threats to business continuity and resilience

Summary

Financial risk managers are vital to any integrated financial system of managing and communicating risk. The GPA study is a contemporary and comprehensive description of the work of risk managers across work settings, geographic regions, job roles and experience levels.

The GPA validates the FRM Exam and FRM program. It explores the knowledge and capabilities financial risk managers need to have to be effective in their organizations. The results of the GPA inform the development of the FRM curriculum and verify validity, relevance and timeliness of the FRM Exam by providing guidance in updating content coverage to reflect current practice.

The process of a practice analysis is important for programs that desire to continually evolve and reflect the critical knowledge and tasks in the industry. It is important for practitioners who desire to evolve and be successful in their career.

GPA SURVEY METHODOLOGY

The GARP Global Practice Analysis survey was developed by several groups of financial risk management experts, requiring 10 months and the efforts of several groups of risk experts.

The GPA Advisory Committee provided conceptual guidance for the GPA and was responsible for reviewing and approving the mission, goals and research methodologies of the GPA, selecting Subject Matter Experts and roles for the Practice Analysis Task Force, focus group panelists and independent reviewers. The Advisory Committee also offered strategic guidance related to research activities.

The Practice Analysis Task Force, comprised of Subject Matter Experts (SMEs) representative of key professional and demographic characteristics of financial risk managers, delineated the financial risk management practice into the practice and knowledge domains and identified the tasks within the domains. Using these as a framework, it created the survey document that incorporated the Task Force conceptualization of risk practice as divided into two distinct organizing structures. The first

was process-based domains of practice related to performance of activities across all practice settings and areas of specialization. The second encompassed knowledge-based content areas comprising risk management topics organized into fundamental and specialization-specific knowledge.

Additional panels of SMEs participated in complementary data collection and review activities, including telephone interviews, targeted online data collection initiatives, independent peer review, focus panels and pilot testing of the online validation survey.

Information from all project stakeholders was aggregated and structured into the survey offered by GARP to global risk managers the summer of 2017, including FRMs, ERPs and other risk managers engaged with GARP and its offerings. The survey was promoted via direct email invitation and through social media. More than 3,200 completed and validated surveys were received and analyzed.

Creating
a culture
of risk
awareness®

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