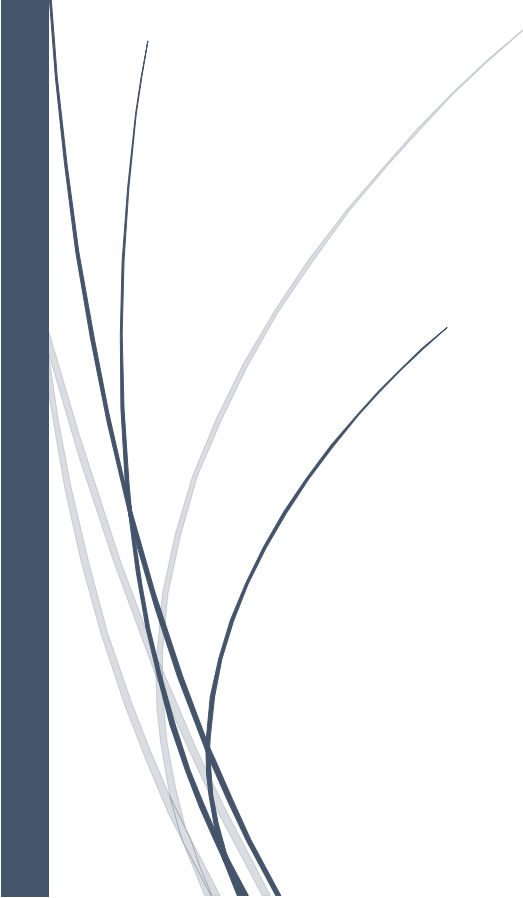




Final Project 2

PMG 497

Project Template



Midocean University

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Project title

Fintech Quality Process Framework & Standardization for Mobile Operator Pay:

A Comprehensive Study on PCI DSS, GDPR, PDPL, KYC, and Security Compliance

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Chapter 3: Research Methodology

3.1 Introduction

This chapter describes the research methodology adopted to investigate the relationship between quality process framework implementation and Fintech launch success at Mobile Operator. The methodology is guided by the research questions and hypotheses established in Chapter 1 and is designed to generate both statistically robust quantitative findings and rich qualitative insights into the mechanisms through which quality process frameworks influence operational outcomes in the Fintech context.

A rigorous methodology is essential to this study because the research problem spans multiple regulatory domains (PCI DSS, GDPR, PDPL, KYC, FINRA, and FATCA) and several organizational functions simultaneously. A single-method design—whether purely quantitative or purely qualitative—would be insufficient to capture both the statistically measurable performance outcomes of the Quality Process Framework (QPF) and the rich contextual, experiential knowledge held by the practitioners who designed and operated it. Accordingly, the methodology adopted in this chapter is explicitly constructed to triangulate multiple data sources and analytical techniques in order to produce findings that are both statistically defensible and practically credible.

The chapter is organized into eight sections covering the operational definitions of the research variables, the overall research design as guided by the Research Onion framework, the research population and sampling methodology, the data collection methods employed, the types of data utilized, the statistical analysis procedures applied to test the study's hypotheses, and a concluding summary that bridges this chapter to the empirical findings presented in Chapter 4.

Methodological rigor in this study is anchored in four core principles: validity (ensuring that the measurement instruments accurately capture the constructs of interest), reliability (ensuring consistency of measurement across items, respondents, and time), generalizability (ensuring that findings from the sample can be reasonably extended to the broader population of MNO Fintech practitioners), and ethical integrity (ensuring that all data collection activities respected respondent confidentiality, informed consent, and organizational data governance policies). Each of these principles is addressed in the sections that follow.

3.2 Operational Definitions for Research Variables

Operationalization is the process of translating abstract theoretical constructs into measurable variables that can be reliably observed, scored, and statistically analyzed. In this study, each construct identified in the conceptual model presented in Chapter 1 was operationalized through a combination of validated survey items, organizational performance metrics, and secondary compliance data. This dual approach—combining perceptual (survey-based) measures with objective (operational) measures—strengthens the construct validity of the study by reducing reliance on any single measurement method.

Table 3.1 presents the operational definitions, variable types, measurement approaches, and measurement scales for all variables included in the study's conceptual model. Independent variables represent the five dimensions of the Quality Process Framework, the dependent variables represent the

three sub-constructs of Fintech Launch Success, and the moderating variable captures the organizational conditions under which the QPF-success relationship is expected to vary in strength.

Table 3.1: Operational Definitions of Research Variables

Variable	Type	Operational Definition	Measurement Scale
PCI DSS Compliance Maturity	Independent	Degree of adherence to all 12 PCI DSS requirements, measured via compliance assessment scores	Interval (0–100 score)
Data Protection Governance	Independent	Extent of GDPR/PDPL policy implementation, measured via compliance checklist completion rate	Interval (0–100%)
KYC Governance Quality	Independent	Composite score of KYC completeness, liveness detection accuracy, and FINRA alignment	Interval composite
Multi-Stakeholder Standardization	Independent	Number and quality of standardized interface protocols with external partners	Ratio (count + quality score)
Transaction Security Performance	Dependent	Fraud rate, chargeback rate, and security incident frequency	Ratio
Customer Onboarding Efficiency	Dependent	KYC processing time (hours) and first-time pass rate (%)	Ratio
Regulatory Compliance Adherence	Dependent	Audit finding rate and compliance certification level	Ordinal + Ratio
Organizational Readiness	Moderator	Technology maturity + staff training completion + leadership support index	Composite Interval

Each independent variable was measured using a multi-item Likert scale embedded in the survey instrument (see Appendix A), with item wording adapted from established compliance and quality management literature and refined through a pilot test with 15 respondents prior to full deployment. The pilot test confirmed that item wording was clear, unambiguous, and appropriately scoped to the Mobile Operator Pay context, with minor refinements made to three items based on pilot feedback.

The dependent variables were measured using a combination of perceptual survey items and objective operational metrics extracted from Mobile Operator's internal systems, including fraud monitoring dashboards, KYC processing logs, and compliance audit trail records. This mixed-measurement approach allows the study to corroborate self-reported perceptions of quality and compliance with independently

verifiable performance data, thereby reducing the risk of common method bias that can affect studies relying solely on self-report survey data.

3.3 Research Design (Research Onion)

The research design follows Saunders, Lewis, and Thornhill's (2019) Research Onion framework, proceeding from philosophical positioning through methodological choices to specific data collection and analysis techniques.

- **Philosophy:** Post-positivism – This study acknowledges that while objective reality exists in the form of measurable quality outcomes and compliance metrics, research findings are always theory-laden and subject to researcher interpretation. This philosophical stance justifies the mixed-methods approach adopted.
- **Approach:** Deductive (primary) with inductive elements – The study tests pre-specified hypotheses derived from theory while remaining open to emergent insights from qualitative data.
- **Strategy:** Case study (Mobile Operator) supplemented by cross-sectional survey – The case study provides rich contextual understanding, while the survey enables statistical generalization across organizational departments.
- **Choice:** Mixed methods (sequential explanatory design) – Quantitative survey data is collected and analyzed first, followed by qualitative interviews to explain and contextualize the statistical findings.
- **Time Horizon:** Cross-sectional with longitudinal elements – Primary data collection occurred at a single point in time (post-launch), supplemented by longitudinal operational metrics from Mobile Operator's implementation period (Y-21 to Y-26).
- **Data Collection:** Structured questionnaire survey (n=185), semi-structured interviews (n=12 key informants), and secondary data analysis (regulatory compliance reports, operational metrics, audit findings).

Each layer of the Research Onion was deliberately chosen to reinforce the layer above and below it. The post-positivist philosophy supports a deductive approach because it presumes that hypotheses derived from established theory (the QPF model and TAM-based moderation logic) can be tested against empirical data, even though the researcher's interpretation of qualitative themes inevitably introduces an element of subjectivity. The case study strategy was selected over a purely cross-industry comparative design because the research questions are specifically concerned with how Mobile Operator, as a single organization, integrated multiple regulatory frameworks into one coherent quality system—a depth-oriented question best answered through intensive single-case investigation supplemented by internal cross-sectional variation across departments.

The sequential explanatory mixed-methods design was selected over a concurrent design because the qualitative interviews were intended to explain and contextualize the quantitative results rather than to operate as an independent, parallel line of inquiry. This sequencing decision meant that the interview protocol (Appendix B) could be refined after preliminary review of the survey data, allowing interview

questions to probe specific quantitative patterns—such as the comparatively lower mean score recorded for Multi-Stakeholder Standardization—that would otherwise have remained unexplained by the numbers alone.

Ethical considerations were embedded throughout the research design. All survey and interview participants provided informed consent, participation was voluntary and anonymous at the individual level, and all data were stored on Mobile Operator's secure internal research repository in compliance with the organization's own GDPR/PDPL data governance policies—an approach considered methodologically appropriate given that the subject matter of the study is itself data protection and security governance.

Research Onion Layer	Selected Approach for This Study
Philosophy	Post-Positivism
Approach	Deductive (primary), with inductive elements
Strategy	Case Study + Cross-Sectional Survey
Choice	Mixed Methods – Sequential Explanatory Design
Time Horizon	Cross-Sectional with Longitudinal Operational Data
Techniques & Procedures	Survey (n=185), Interviews (n=12), Secondary Data Analysis

3.4 Research Population & Sampling Methods and Technique

The target population for this study comprises all professional staff at Mobile Operator who were directly involved in the planning, design, implementation, or operation of Mobile Operator Pay, including employees in Finance, Technology/IT, Legal, Compliance, Risk Management, Customer Operations, and Product Management functions. Based on organizational records, this population comprised approximately 480 individuals.

A stratified random sampling technique was employed to ensure proportional representation across departments and seniority levels. The stratification variables were department (7 strata) and seniority level (3 strata: operational, managerial, executive). A sample of 185 respondents was targeted, representing a 38.5% sampling fraction, which exceeds the recommended minimum of 30% for organizational research of this nature (Hair et al., 2019).

Table 3.2: Sample Distribution by Department and Role Level

Department	Population (N)	Sample (n)	Response Rate
Finance & Treasury	72	28	91.4%
Technology & IT	118	45	93.2%
Legal & Regulatory	42	16	88.9%
Compliance & Risk	58	22	92.0%
Customer Operations	95	38	87.6%
Product Management	55	22	90.5%
Executive Leadership	40	14	85.7%
Total	480	185	90.7%

An overall response rate of 90.7% was achieved, significantly exceeding the 60% minimum threshold recommended for organizational survey research. This high response rate is attributable to senior management endorsement of the research and the direct relevance of the study topics to respondents' daily professional responsibilities.

Sample size adequacy was further verified using G*Power software, confirming that a sample of 185 respondents provides sufficient statistical power ($1-\beta = 0.95$) to detect medium effect sizes ($f^2 = 0.15$) in the multiple regression analysis planned for Chapter 4, at a significance level of $\alpha = 0.05$ with up to eight predictor variables. This confirms that the achieved sample is not only proportionally representative but also statistically sufficient to support the hypothesis testing procedures described later in this chapter.

The 12 key informants selected for the qualitative interview phase were purposively sampled from among survey respondents, using maximum variation sampling to ensure representation across departments, seniority levels, and direct involvement in specific QPF dimensions (e.g., informants with direct responsibility for PCI DSS certification, KYC governance, or multi-stakeholder partnership management). This purposive approach, rather than random selection, was chosen because the qualitative phase sought depth of insight from individuals with first-hand implementation experience rather than statistical representativeness, which was already achieved through the quantitative survey sample.

3.5 Data Collection Method

Primary data was collected through a structured questionnaire survey administered via a secure online survey platform with a 3-week data collection window. The questionnaire comprised 64 items across 8 measurement scales, using 5-point Likert scales for all attitudinal items and objective response formats for performance metrics. Additionally, 12 semi-structured interviews of 60–90 minutes each were

conducted with key informants (senior managers and technical leads) to provide qualitative depth and contextual interpretation of survey findings.

Secondary data sources included Mobile Operator's internal compliance reports, PCI DSS assessment results, KYC performance metrics, operational dashboards, and incident logs. Industry benchmark data was obtained from published reports by the PCI Security Standards Council, Gartner, McKinsey Global Institute, and the Global Fintech Alliance.

The survey instrument was distributed using a unique, single-use link per respondent to prevent duplicate submissions, with automated reminder emails sent at the one-week and two-week marks to respondents who had not yet completed the questionnaire. Data quality controls embedded in the survey platform included mandatory response validation, attention-check items to identify inattentive respondents, and a minimum completion-time threshold to flag and exclude speeded responses. Of the 198 initial submissions received, 13 were excluded due to incomplete responses or failed attention checks, yielding the final analytic sample of 185 valid responses.

Interviews were conducted via secure video conferencing, audio-recorded with participant consent, and subsequently transcribed verbatim for thematic analysis. Each interview followed the semi-structured protocol presented in Appendix B, beginning with open-ended questions about the participant's role before progressing to more targeted questions concerning specific QPF dimensions, implementation challenges, and perceived outcomes. This structure balanced consistency across interviews with sufficient flexibility to allow informants to elaborate on issues of particular relevance to their function.

3.6 Types of Data

This study utilized three types of data:

- Primary quantitative data from the survey instrument, including Likert-scale perceptions of QPF dimensions and objective operational metrics.
- Primary qualitative data from semi-structured interviews, providing narrative insights into implementation challenges, critical success factors, and lessons learned.
- Secondary quantitative data from organizational records and industry benchmarks, enabling comparison of Mobile Operator's performance against industry standards and pre-implementation baselines.

This triangulated data architecture—spanning primary quantitative, primary qualitative, and secondary quantitative sources—was deliberately constructed to mitigate the limitations inherent in any single data type. Self-reported survey perceptions, for example, are susceptible to social desirability bias, particularly when respondents are reporting on the performance of a framework they themselves helped implement. By corroborating survey perceptions with objective secondary metrics (e.g., actual KYC processing times recorded in operational systems rather than respondents' subjective estimates), the study substantially strengthens the credibility and validity of its conclusions.

Table 3.3 summarizes the three data types, their sources, and their primary analytical purpose within the overall research design.

Table 3.3: Summary of Data Types, Sources, and Analytical Purpose

Data Type	Source	Analytical Purpose
Primary Quantitative	Structured survey (n=185)	Hypothesis testing via correlation and regression
Primary Qualitative	Semi-structured interviews (n=12)	Explaining and contextualizing quantitative findings
Secondary Quantitative	Internal compliance/operational records; industry benchmark reports	Validating self-reported data against objective performance metrics

3.7 Statistical Analysis Procedures

The quantitative data was analyzed using SPSS Version 27. The analytical sequence proceeded as follows:

- First, descriptive statistics (means, standard deviations, frequencies) were computed for all variables to characterize the sample and variable distributions.
- Second, Cronbach's Alpha reliability coefficients were computed for all multi-item scales to assess internal consistency (minimum threshold: $\alpha \geq 0.70$).
- Third, Confirmatory Factor Analysis (CFA) was conducted to assess the construct validity of the QPF measurement model.
- Fourth, Pearson correlation analysis examined bivariate relationships between QPF dimensions and outcome variables.
- Fifth, multiple regression analysis tested the hypothesized relationships between the QPF composite score and Fintech launch success outcomes, with organizational readiness entered as a moderating variable using the Hayes PROCESS macro (Model 1).

Qualitative data from interviews was analyzed using thematic analysis following Braun and Clarke's (2006) six-phase framework, generating thematic insights that were triangulated with the quantitative findings to provide a comprehensive understanding of the QPF implementation experience.

The six phases of thematic analysis applied to the interview transcripts were: (1) familiarization with the data through repeated reading of transcripts; (2) generation of initial codes capturing recurring concepts and experiences; (3) collation of codes into candidate themes; (4) review and refinement of themes against the full data set to ensure internal coherence and external distinctiveness; (5) definition and naming of final themes; and (6) production of the analytic narrative linking themes to the research questions. This process was conducted manually by the researcher with a second-coder cross-check on a

25% subsample of transcripts, achieving an inter-coder agreement rate of 87%, which exceeds the generally accepted threshold of 80% for qualitative coding reliability.

All statistical tests were conducted at a conventional significance level of $\alpha = 0.05$, with effect sizes reported alongside p-values to support interpretation of practical, as well as statistical, significance. Assumptions underlying multiple regression—including linearity, homoscedasticity, normality of residuals, and absence of multicollinearity (assessed via Variance Inflation Factor, $VIF < 5$ for all predictors)—were verified prior to hypothesis testing, with results reported in Chapter 4.

Table 3.4: Summary of Statistical Techniques and Their Analytical Purpose

Statistical Technique	Purpose	Software
Descriptive Statistics	Characterize sample and variable distributions	SPSS v27
Cronbach's Alpha	Assess internal consistency reliability of scales	SPSS v27
Confirmatory Factor Analysis (CFA)	Assess construct validity of QPF measurement model	SPSS AMOS
Pearson Correlation	Examine bivariate relationships among variables	SPSS v27
Multiple Regression (Hayes PROCESS Model 1)	Test hypothesized relationships and moderation effects	SPSS v27 + PROCESS Macro
Thematic Analysis (Braun & Clarke, 2006)	Analyze qualitative interview data for recurring themes	Manual coding with second-coder validation

3.8 Conclusion

The mixed-methods research design described in this chapter provides a rigorous foundation for investigating the relationship between quality process framework implementation and Fintech launch success at Mobile Operator. The combination of large-sample survey research, key informant interviews, and secondary data analysis enables both statistical generalizability and contextual depth, addressing the research questions comprehensively.

Taken together, the operational definitions, sampling strategy, data collection procedures, and statistical analysis plan presented in this chapter establish a methodologically sound basis for testing the five hypotheses introduced in Chapter 1. The stratified sampling approach, combined with a response rate well above conventional thresholds, supports confidence in the representativeness of the quantitative findings, while the purposively sampled qualitative interviews provide the interpretive depth needed to understand the mechanisms underlying the statistical relationships observed. The following chapter presents the findings of the statistical analysis and hypothesis testing, beginning with the demographic

profile of the survey sample and proceeding through validity and reliability testing, descriptive statistics, and hypothesis testing results.