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A METHODOLOGY FOR IMPROVING THE FINANCIAL EFFICIENCY OF INVESTMENTS DIRECTED TOWARD BUILDING CUSTOMER EQUITY IN COMMERCIAL BANKS

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Abstract: The increasing digitalisation of financial services and intensifying competition among banks, fintech companies and platform-based financial service providers require commercial banks to reconsider the principles used to evaluate investments in customer acquisition, retention and development. Conventional approaches frequently treat customer-oriented expenditure as a current operating cost and assess its effectiveness through short-term indicators such as the number of acquired customers, campaign conversion, transaction volume or immediate revenue. Such measures, however, do not fully reflect the long-term financial value generated by sustainable bank–customer relationships.

This study develops a methodological framework for evaluating and improving the financial efficiency of investments directed toward the formation of customer equity in commercial banks. The proposed approach integrates customer lifetime value, retention probability, product penetration, cost-to-serve, expected credit losses, capital charges and the bank's required rate of return within a unified financial evaluation system. Customer equity is consequently interpreted not merely as a marketing indicator but as the aggregate risk-adjusted economic value of the bank's customer relationships.

The study proposes the concepts of Risk-Adjusted Customer Lifetime Value and Customer Equity Investment Efficiency for evaluating the incremental economic return generated by customer-oriented investments. The methodology distinguishes between the existing value of a customer base and the additional value attributable specifically to an investment decision, thereby reducing the risk of overstating investment effectiveness. The framework may be applied to investments in digital banking, customer acquisition, loyalty programmes, CRM systems, service quality, data analytics, cross-selling and customer retention. Its application can support more efficient allocation of financial resources and strengthen the relationship between customer strategy and the long-term financial performance of commercial banks.

Keywords: commercial banks, customer equity, customer lifetime value, investment efficiency, financial efficiency, customer retention, banking profitability, risk-adjusted value, digital banking.

1. Introduction

The transformation of the banking industry has fundamentally changed the economic nature of competition for customers. Commercial banks are increasingly required to invest not only in physical infrastructure and traditional financial products but also in digital platforms, customer data systems, artificial intelligence, personalised communication, loyalty mechanisms, service quality and ecosystem partnerships. Digitalisation can generate efficiency gains, reduce transaction costs and improve customer experience, but it simultaneously increases competition and creates new strategic and operational risks for incumbent banks.

Under these conditions, the ability of a bank to acquire a customer cannot by itself be considered a sufficient indicator of investment performance. The economic importance of a customer depends on the duration of the relationship, volume and structure of financial products used, contribution margin, transaction activity, credit risk, cost of servicing, probability of retention and potential for further expansion of the relationship.

Accordingly, investments aimed at expanding or strengthening the customer base should be evaluated from the perspective of their capacity to generate future risk-adjusted cash flows.

The concept of customer equity provides an appropriate theoretical basis for such an approach. Customer equity can generally be interpreted as the aggregated economic value of the bank's existing and prospective customer relationships. The financial logic underlying this concept is closely connected with customer lifetime value, which estimates the discounted future economic contribution of an individual customer. Previous research has demonstrated that customer valuation can establish a direct relationship between customer-related decisions and enterprise value.

Rust, Lemon and Zeithaml developed a framework in which the return on marketing expenditure is evaluated through the incremental change in customer equity relative to the expenditure required to generate that change. This approach is particularly relevant to banking because customer acquisition, retention and development decisions often generate benefits over several periods rather than immediately.

Nevertheless, the direct application of conventional customer equity models to commercial banking is problematic. Banks differ from many other service organisations because customer profitability is inseparable from financial risk, regulatory capital, liquidity considerations and the cost of financial intermediation. A borrower generating substantial interest income may simultaneously expose the bank to significant credit risk. Similarly, a highly active customer can create substantial transaction revenue while also requiring considerable technological, operational or incentive expenditure.

Therefore, customer value in commercial banking should be assessed on a risk-adjusted and capital-adjusted basis.

The purpose of this study is to develop a methodology for improving the financial efficiency of investments directed toward building customer equity in commercial banks.

The following objectives are addressed:

1. to clarify the financial interpretation of customer equity in commercial banking;
2. to develop a risk-adjusted approach to customer lifetime value;
3. to identify the incremental customer equity generated by a specific investment;
4. to propose indicators for measuring the financial efficiency of customer-oriented investments;
5. to formulate a mechanism for allocating investment resources among customer-equity initiatives.

2. Literature Review and Research Gap

Customer-based valuation developed from the recognition that customers represent a fundamental source of future cash flows. Gupta, Lehmann and Stuart demonstrated that customer valuation can be used to connect customer-related indicators with the financial value of the firm. Their approach defines customer value through expected discounted future earnings and places particular importance on retention, margin and acquisition economics.

Rust, Lemon and Zeithaml subsequently extended the concept by linking changes in customer equity to the financial return generated by marketing expenditure. Their framework implies that

investment decisions should not be assessed merely through communication outputs or short-term sales but through the additional lifetime value created across current and potential customers.

The application of customer lifetime value to banking has also received considerable attention. Haenlein, Kaplan and Beeser developed a customer lifetime value model specifically for retail banking, recognising the distinctive characteristics of long-term, multi-product financial relationships. Later research by Ekinci, Uray and Ülengin showed that monetary value, risk characteristics and product ownership can significantly contribute to the estimation of customer lifetime value in banking.

This distinction is especially important for financial institutions. A customer who generates a high gross contribution cannot automatically be classified as a high-value customer if the economic contribution is accompanied by disproportionately high financial risk.

Recent research has therefore moved toward risk-adjusted customer valuation. Singh, Murthi, Rao and Steffes argue that conventional customer lifetime value may overestimate the economic attractiveness of customers when customer risk is excluded. Their risk-adjusted lifetime value approach explicitly integrates customer risk into the valuation mechanism.

Digital transformation further expands the information available for customer valuation. Transactional behaviour, digital engagement, product usage, payment activity and other behavioural signals allow banks to develop more dynamic estimates of future customer value. Recent research has also explored the use of open banking information for estimating potential customer lifetime value beyond the financial relationship observed within a single institution.

Despite these developments, a methodological gap remains between **customer valuation** and **investment valuation**.

Estimating that a bank possesses customer equity of a certain amount does not demonstrate that a particular investment in digital infrastructure, customer acquisition, loyalty, service quality or CRM is financially efficient.

The relevant financial question is not:

“How valuable are the customers affected by the investment?”

but rather:

“How much additional risk-adjusted customer value was created because the investment was undertaken?”

This distinction constitutes the central methodological principle of the present study.

3. Research Methodology

The proposed methodology is based on a combination of discounted cash-flow principles, customer lifetime valuation, risk adjustment and incremental investment analysis.

3.1. Customer Equity as a Financial-Economic Category

For a commercial bank, customer equity may be expressed as:

$$CE = \Sigma\ RACLVi$$

where:

- **CE** — customer equity of the bank;
- **RACLVi** — risk-adjusted customer lifetime value of customer *i*;
- **n** — total number of customers.

Unlike approaches based only on revenue or contribution margin, the proposed methodology evaluates the customer's economic value after considering the cost and financial risk associated with maintaining the relationship.

Customer equity should therefore be considered a dynamic financial indicator rather than a static measure of the size of the customer base.

A bank may increase the number of customers while simultaneously reducing customer equity if newly acquired customers demonstrate low activity, high servicing costs, weak retention or excessive risk.

Conversely, a bank may create substantial additional customer equity without major growth in customer numbers when it improves product penetration, transaction activity, retention or cost efficiency among existing customers.

3.2. Risk-Adjusted Customer Lifetime Value

For commercial banks, the following general form of Risk-Adjusted Customer Lifetime Value is proposed:

$$RACLV_i = \Sigma[t=1 \text{ to } T] \{P_{i,t} \times [R_{i,t} - SC_{i,t} - EL_{i,t} - CC_{i,t}] / (1 + k)^t\} - AC_i$$

where:

- $R_{i,t}$ — expected revenue generated by customer *i* during period *t*;
- $SC_{i,t}$ — expected cost of servicing the customer;
- $EL_{i,t}$ — expected financial loss associated with the customer;
- $CC_{i,t}$ — economic or regulatory capital charge attributable to the relationship;
- $P_{i,t}$ — probability that the customer relationship remains active in period *t*;
- **k** — required discount rate;
- AC_i — customer acquisition cost;
- **T** — valuation horizon.

Revenue may include net interest income attributable to the customer's assets and liabilities, fee and commission income, transaction income and other directly attributable financial benefits.

Service cost should include costs associated with channels, transactions, customer support, incentives, CRM activity and relevant technological infrastructure.

Expected loss is particularly important for credit-related customers and allows gross profitability to be transformed into a risk-adjusted measure.

The capital charge reflects the fact that banking activities consume financial resources and regulatory capital. Consequently, two customers generating identical accounting revenue may have substantially different economic values.

3.3. Baseline and Post-Investment Customer Equity

A major limitation of conventional investment assessment is the attribution of existing customer value to a newly implemented initiative.

To address this limitation, two scenarios should be constructed:

CE_0 = customer equity in the absence of the investment

and

CE_1 = expected customer equity after implementation of the investment.

The incremental customer equity generated by investment *j* is:

$$\Delta CE_j = CE_1 - CE_0$$

However, when banking risk is explicitly incorporated, the preferred measure becomes:

$$\Delta RACE_j = RACE_1 - RACE_0$$

where **RACE** represents aggregate risk-adjusted customer equity.

This incremental approach prevents the bank from treating the entire economic value of customers exposed to a campaign or digital service as the result of the investment.

Only the additional value attributable to the investment should be included in the financial efficiency calculation.

3.4. Customer Equity Investment Efficiency

The study proposes a Customer Equity Investment Efficiency indicator:

$$CEIE_j = (\Delta RACE_j - I_j) / I_j \times 100$$

where:

- $CEIE_j$ — customer equity investment efficiency of project *j*;
- $\Delta RACE_j$ — incremental risk-adjusted customer equity created by project *j*;
- I_j — total investment expenditure associated with the project.

A complementary measure is the Customer Equity Investment NPV:

$$CE\text{-}NPV_j = \Delta RACE_j - I_j$$

A project creates economic value when:

$$CE\text{-}NPV_j > 0$$

and its rate of return should also be evaluated against the bank's internally established hurdle rate and alternative uses of capital.

The proposed methodology therefore converts customer-oriented initiatives into investment alternatives comparable on a common financial basis.

4. Methodological Framework for Improving Investment Efficiency

The methodology can be implemented through seven interconnected stages.

Stage 1. Identification and Classification of Customer-Oriented Investments

Customer-equity investments should first be separated from ordinary operating expenditure.

Relevant investments may include:

- digital banking platforms;
- CRM and customer-data infrastructure;
- acquisition programmes;
- loyalty and retention programmes;
- personalised financial offers;
- service-quality improvements;
- development of new customer-oriented products;
- artificial intelligence and predictive analytics;
- customer ecosystem development;
- financial literacy and engagement programmes.

The classification should identify the investment amount, expected useful period, target customer segment and expected mechanism through which customer behaviour will be affected.

Stage 2. Customer Segmentation by Economic Value

Segmentation should not rely only on demographic characteristics.

Customers should be grouped according to economically significant variables such as:

- profitability;
- retention probability;
- transaction frequency;
- product penetration;
- deposit balances;
- borrowing activity;
- fee income;
- credit risk;
- servicing cost;
- digital activity;
- potential for additional product adoption.

This enables the bank to distinguish between customers with high current value, high potential value, low value and negative risk-adjusted value.

Stage 3. Estimation of Baseline Risk-Adjusted Customer Equity

Before evaluating an investment, the bank should estimate what customer equity would reasonably be expected to become without additional intervention.

This baseline is essential because customer value may increase naturally as a result of macroeconomic growth, inflation, existing product development, changes in interest rates or other unrelated initiatives.

The baseline scenario therefore becomes the counterfactual against which investment performance is assessed.

Stage 4. Measurement of the Investment's Incremental Effect

The effect of an investment should be traced through specific customer-value drivers.

A customer-oriented investment can increase financial value through one or several channels:

Investment → Acquisition → Retention → Product penetration → Transaction activity → Margin → Risk-adjusted cash flow → Customer equity.

For example, investment in mobile banking infrastructure may:

- reduce customer servicing costs;
- increase transaction frequency;
- improve retention;
- stimulate use of additional financial products;
- increase fee income;
- reduce reliance on physical service channels.

A loyalty programme may affect the same final indicator through a different mechanism by increasing retention probability and product usage.

Accordingly, the methodology allows different types of investment to be compared by translating their behavioural effects into incremental financial value.

Stage 5. Risk and Cost-of-Capital Adjustment

Bank customer value should subsequently be adjusted for:

- expected credit losses;
- fraud and transaction risks where measurable;
- operational costs;
- regulatory or economic capital consumption;
- the time value of money.

This stage is critical for maintaining the financial orientation of the methodology.

Investment in customers should not be considered efficient simply because it increases revenue. It is efficient only when it creates sufficient additional risk-adjusted economic value relative to the financial resources committed.

Stage 6. Comparative Evaluation of Investment Alternatives

When several competing projects are available, the bank can rank them according to CE-NPV and CEIE.

For investment portfolio optimisation:

Maximise Σ CE-NPV$_j \times X_j$

subject to:

$\Sigma I_j \times X_j \leq B$

where:

- **B** — available investment budget;
- **X_j** — decision variable representing implementation of project *j*.

Additional restrictions may be introduced for risk limits, strategic priorities, required customer segments or regulatory requirements.

The result is a transition from expenditure-based customer management toward portfolio-based customer investment management.

Stage 7. Continuous Recalculation and Performance Control

Customer equity should be recalculated periodically because customer behaviour and financial conditions change over time.

The monitoring system should compare:

- forecast RACLV against realised RACLV;
- expected retention against actual retention;
- expected incremental revenue against realised revenue;
- expected cost reductions against realised savings;
- planned CEIE against actual CEIE.

Significant deviations should trigger revision of investment allocation.

This creates a feedback loop:

Measurement → Investment → Customer behaviour → Financial result → Revaluation → Reallocation.

5. Discussion

The proposed methodology changes the traditional interpretation of expenditure related to customers.

A bank often records investments in advertising, digital services, CRM, loyalty, service improvements and customer analytics in separate organisational budgets. Consequently, their financial effects may also be evaluated independently.

Such fragmentation makes it difficult to determine whether the aggregate resources directed toward customers create sustainable economic value.

Customer-equity-based investment analysis introduces a common financial denominator.

For example, two projects may generate substantially different operational indicators. A digital campaign may acquire a large number of customers, while a CRM project may influence a much smaller customer segment. If effectiveness is assessed through customer numbers alone, the acquisition initiative may appear superior.

However, when both projects are evaluated through incremental risk-adjusted lifetime value, the conclusion may change. Customers acquired through expensive incentives may demonstrate low retention and low long-term profitability, while improved management of an existing high-value segment may generate significantly greater incremental customer equity.

The methodology also creates a direct connection between marketing-oriented decisions and traditional banking-finance indicators.

Customer retention affects the duration of cash flows.

Cross-selling affects contribution margins.

Digitalisation affects cost-to-serve.

Credit quality affects expected losses.

Capital intensity affects economic profitability.

Together, these variables determine the financial value of customer relationships.

For this reason, customer equity in banking should not be managed exclusively as a marketing concept. It should become part of the bank's investment management, profitability management and financial planning system.

The increasing availability of behavioural and transactional information strengthens the practical feasibility of this approach. Digital financial systems can improve access and efficiency while generating data that may be used for more advanced customer valuation. At the same time, digitalisation creates strategic, technological and operational risks, which reinforces the need for risk-adjusted rather than purely revenue-based investment evaluation.

An important implication of the methodology is that a bank should not necessarily maximise total customer numbers.

The economically rational objective is to maximise **risk-adjusted customer equity within the bank's resource and risk constraints**.

This distinction is especially important in competitive banking markets where aggressive acquisition strategies may increase operating scale without generating a proportional increase in economic value.

6. Scientific and Practical Contribution

The methodological contribution of the study consists of integrating four previously separated dimensions of banking management:

customer behaviour + customer profitability + banking risk + investment efficiency.

The proposed framework provides several methodological improvements.

First, customer equity is interpreted as an aggregate financial-economic value rather than merely a customer relationship indicator.

Second, customer lifetime value is adjusted for expected losses, capital consumption and servicing costs, making it more appropriate for the specific characteristics of commercial banking.

Third, investment effectiveness is calculated using the **incremental** change in customer equity rather than the absolute value of the customers involved.

Fourth, a unified Customer Equity Investment Efficiency indicator is proposed for comparing heterogeneous customer-oriented investment projects.

Fifth, the methodology allows the bank to optimise the allocation of investment resources between acquisition, retention, digitalisation, product development and customer-experience initiatives.

These elements provide a basis for incorporating customer equity into strategic financial planning and investment decision-making in commercial banks.

7. Conclusion

The sustainable financial performance of a commercial bank increasingly depends not only on its volume of assets, deposits or loans but also on its ability to create and retain economically valuable customer relationships.

Traditional indicators used for assessing customer-oriented expenditure provide only a partial picture of this process because they frequently focus on short-term outputs and do not fully incorporate future cash flows, customer retention, risk and the cost of financial resources.

This study proposes a methodology in which investments directed toward customer acquisition, retention and development are evaluated through the incremental risk-adjusted customer equity they generate.

The methodology combines customer lifetime value with expected financial losses, servicing costs, capital charges, retention probability and discounting. Based on this framework, Customer Equity Investment Efficiency and Customer Equity Investment NPV can be used to determine whether a customer-oriented investment creates additional economic value for the bank.

The approach has important implications for commercial bank management. It makes it possible to compare investments of different types on a common financial basis, prioritise projects

that generate the highest risk-adjusted value, improve investment-budget allocation and establish a stronger link between customer strategy and banking profitability.

Further empirical research should test the methodology using customer-level banking data. In particular, future studies may estimate the effects of digital engagement, product penetration, transaction intensity, customer satisfaction, retention and credit risk on risk-adjusted customer lifetime value. The methodology can also be expanded through machine-learning models for predicting customer behaviour and causal methods for identifying the incremental financial effect of individual customer-oriented investments.

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