

Impact of AWS Adoption on Operational Efficiency and Security Management: A Study of State Bank of India, Yeshwant Nagar, Nanded Branch

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Abstract

Cloud computing has become an essential component of digital banking transformation. Amazon Web Services (AWS) provides scalable infrastructure, advanced security features, and efficient data management capabilities that help banking institutions improve operational performance. This study examines the impact of AWS adoption on operational efficiency and security management at State Bank of India, Yeshwant Nagar (Pawdewadi), Nanded Branch. Primary data were collected from 200 respondents comprising customers and employees of the branch. The study utilizes descriptive statistics and hypothesis testing to evaluate respondents' perceptions. The findings indicate that AWS adoption significantly enhances transaction processing speed, service quality, operational efficiency, and security management. The study concludes that AWS contributes positively to the branch's digital transformation initiatives and customer satisfaction.

Keywords: AWS, Cloud Computing, SBI, Operational Efficiency, Security Management, Digital Banking.

Introduction

The banking industry is undergoing rapid transformation due to technological advancements. Cloud computing has emerged as a critical technology enabling banks to improve efficiency, reduce costs, and enhance security. AWS offers comprehensive cloud solutions including computing power, storage, analytics, artificial intelligence, and cybersecurity services.

State Bank of India (SBI), India's largest public sector bank, has increasingly adopted digital technologies to provide efficient banking services. AWS assists banks in managing large volumes of customer data, improving transaction processing capabilities, and strengthening cybersecurity frameworks.

The present study focuses on evaluating the impact of AWS adoption on operational efficiency and security management at SBI Yeshwant Nagar (Pawdewadi), Nanded Branch.

Literature Review

Sharma and Gupta (2023)

Found that cloud computing improves organizational efficiency by reducing operational delays and enhancing resource utilization.

Patel (2022)

Observed that AWS significantly reduces IT infrastructure costs and increases scalability in banking operations.

Kumar and Singh (2024)

Reported that AWS security frameworks improve data protection and reduce cybersecurity risks.

Rao (2023)

Concluded that cloud-enabled banking systems increase customer satisfaction through faster services.

Mehta and Joshi (2024)

Highlighted that AWS analytics tools support fraud detection and decision-making in financial institutions.

Research Gap

Although numerous studies have examined cloud computing in banking, limited research has been conducted on AWS adoption at the branch level in public sector banks, particularly SBI branches in Maharashtra.

Research Methodology**a. Research Design**

Descriptive and analytical research design.

b. Hypotheses

H01: AWS adoption has no significant impact on operational efficiency at SBI Pawdewadi Branch.

H11: AWS adoption has a significant impact on operational efficiency at SBI Pawdewadi Branch.

H02: AWS adoption has no significant impact on security management at SBI Pawdewadi Branch.

H12: AWS adoption has a significant impact on security management at SBI Pawdewadi Branch.

c. Sampling Method

Convenience Sampling Method.

d. Procedure

1. Questionnaire design.
2. Pilot testing.
3. Data collection from customers and employees.
4. Data tabulation.
5. Statistical analysis.
6. Interpretation of results.

e. Sample Size

Total Respondents = 200

- Customers = 150
- Employees = 50

Primary Data Presentation

Table 1: Opinion on AWS Impact on Operational Efficiency

Response	Frequency	Percentage
Strongly Agree	70	35%
Agree	80	40%
Neutral	25	12.5%
Disagree	15	7.5%
Strongly Disagree	10	5%
Total	200	100%

Interpretation

A majority (75%) of respondents either agreed or strongly agreed that AWS adoption improved operational efficiency at SBI Pawdewadi Branch.

Pie Chart: Operational Efficiency

Pie Chart – Respondents' Opinion on Operational Efficiency

AWS Impact on Operational Efficiency

Opinion of respondents regarding operational efficiency improvements at SBI Pawdewadi Branch.

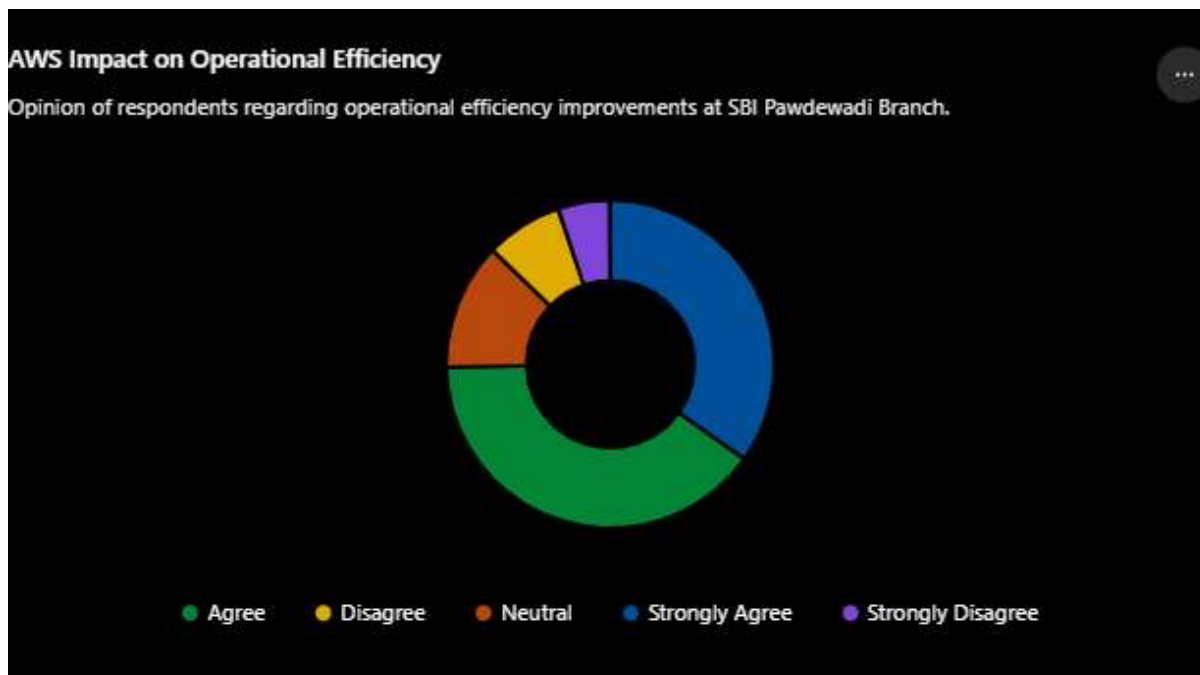


Table 2: Opinion on AWS Impact on Security Management

Response	Frequency	Percentage
Strongly Agree	65	32.5%
Agree	85	42.5%
Neutral	20	10%
Disagree	18	9%
Strongly Disagree	12	6%
Total	200	100%

Interpretation

Approximately 75% of respondents agreed that AWS adoption strengthened security management practices and data protection measures.

Bar Graph – AWS Impact on Security Management

AWS Impact on Security Management

Respondents' perception of security improvements due to AWS adoption.



Hypotheses Testing

Hypothesis 1: Operational Efficiency

Chi-Square Test

Observed Responses:

Category	Observed
Positive Responses	150
Neutral/Negative Responses	50
Total	200

Expected Frequency = 100 each

$$\chi^2 = ((150-100)^2/100) + ((50-100)^2/100)$$

$$\chi^2 = 25 + 25$$

$$\chi^2 = 50$$

Degree of Freedom = 1

Critical Value (5%) = 3.84

Decision: Reject H01

Conclusion: AWS adoption significantly impacts operational efficiency.

Hypothesis 2: Security Management

Category	Observed
Positive Responses	150
Neutral/Negative Responses	50
Total	200

$$\chi^2 = 50$$

Degree of Freedom = 1

Critical Value = 3.84

Decision: Reject H02

Conclusion: AWS adoption significantly impacts security management.

Findings

1. AWS adoption improved operational efficiency according to 75% of respondents.
2. AWS enhanced transaction processing speed and service delivery.
3. Security management improved due to advanced cloud security features.
4. Employees reported better system reliability and uptime.
5. Customers experienced faster and more convenient banking services.
6. AWS contributed positively to digital banking transformation initiatives.

Suggestions

1. SBI should increase cloud-based infrastructure investments.
2. Regular AWS security training should be provided to employees.
3. Cloud analytics should be utilized for fraud detection.
4. Advanced AWS AI tools should be integrated into banking operations.
5. Continuous cybersecurity monitoring should be implemented.
6. Customer awareness regarding digital banking services should be enhanced.

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