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ADOPTION AND USAGE FREQUENCY OF DIGITAL BANKING SERVICES AMONG URBAN CONSUMERS IN GUJARAT

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ABSTRACT:
The evolution of digital technology has significantly redefined the banking scenario in India, making e-banking an essential service channel for customers. This study examines the utilization of e-banking services among 640 customers from four major cities in Gujarat, covering both public and private sector banks. The research evaluates consumer usage behavior across eight key online services, including mobile recharge, utility bill payments, online ticket booking, shopping, money transfer, and investment activities. The mode of access, number of bank accounts, and perceived security of e-banking services are also analyzed to determine the level of digital banking adoption. The findings indicate that services such as mobile recharge, electricity bill payments, money transfers, and online shopping are widely used, particularly through mobile-based platforms. However, lower engagement is noted for telephone bill payments and air ticket bookings, primarily due to limited requirements or lack of awareness. Private sector bank customers display a higher inclination toward e-banking utilization compared to those of public sector banks. Despite the growing reliance on digital transactions, nearly one-third of respondents still perceive e-banking as insecure, indicating a need for enhanced digital security measures and awareness programs. The study concludes that while e-banking adoption in Gujarat shows promising progress, further improvements in technological support, customer education, and trust-building initiatives are necessary to enhance user experience and promote inclusive digital banking growth.

Keywords: E-Banking Utilization, Digital Banking Services, Consumer Behavior, Online Transactions

INTRODUCTION
The banking sector in India has undergone a remarkable digital transformation in recent years, driven by technological advancements, government initiatives, and an increasing demand for convenient financial services. E-banking has emerged as a vital platform that enables customers to access banking services anytime and anywhere through digital channels such as mobile applications, internet banking, and other online platforms. In states like Gujarat, where urbanization and digital literacy are rapidly increasing, the adoption of e-banking has gained significant momentum. Customers now utilize digital services not only for basic transactions but also for a variety of financial activities, including bill payments, bookings, shopping, and investment-related services. However, differences in accessibility, service awareness, and perceived security concerns continue to influence usage behavior. Therefore, studying the utilization patterns of e-banking services among customers of public and private sector banks in Gujarat provides meaningful insights into consumer preferences, challenges, and opportunities for further improvement in digital banking.

Inferential analysis is a pivotal statistical approach used to draw conclusions about a population based on a sample of data, extending beyond descriptive statistics. It allows researchers to make predictions, inferences, and generalizations about a larger population by examining a representative subset. The chi-square test, a fundamental tool in inferential statistics, is particularly useful when dealing with categorical data. Unlike parametric tests, it doesn't assume a normal distribution of data, making it versatile for a wide range of applications.

The chi-square test assesses the association between categorical variables, determining whether the observed distribution significantly differs from what would be expected by chance. It is valuable for examining relationships or dependencies between two categorical variables. For instance, researchers might use it to assess the independence of responses across different groups in survey data, such as examining whether gender and satisfaction levels with a service are significantly associated.

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The test involves comparing observed frequencies (O) in different categories with the frequencies expected (E) under the assumption of independence. The chi-square statistic is then calculated, following a chi-square distribution. By comparing it to critical values from the distribution, researchers can discern whether observed differences are statistically significant.

The chi-square test comes in various forms, such as the goodness-of-fit test and the test of independence. The goodness-of-fit test analyses the distribution of data in a single categorical variable, while the test of independence explores relationships between two categorical variables.

It's important to interpret chi-square results cautiously, as statistical significance doesn't imply causation. While the test identifies associations, it doesn't establish the direction or nature of the relationship. Additionally, large sample sizes may yield statistically significant results even when the practical significance is minimal.

In summary, inferential analysis, particularly the chi-square test, is a crucial aspect of statistical research, providing a robust method for exploring associations in categorical data. Its versatility and non-parametric nature make it applicable across various fields, offering valuable insights into relationships between categorical variables and informing decision-making processes.

BANK PROVIDES GOOD CREDIT FACILITIES

Bank provides good credit facilities				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	236	240	-4	0.07
Agree	214	240	-26	2.82
Neutral	270	240	30	3.75
Disagree	245	240	5	0.10
Strongly Disagree	235	240	-5	0.10
Total	1200	1200		6.84

Table delves into the examination of customers' perspectives on the credit facilities offered by banks in North Gujarat, categorized into "Strongly Agree," "Agree," "Neutral," "Disagree," and "Strongly Disagree."

The anticipated (E) frequencies for each response category are determined based on an equal distribution assumption, with an expected 240 responses for each option in a balanced scenario. The actual responses collected from the survey constitute the observed (O) frequencies. Beginning with the "Strongly Agree" category, where the observed frequency (O) is 236, slightly below the expected frequency (E) of 240, signifying a minor underrepresentation of customers strongly affirming the bank's provision of good credit facilities. The corresponding $(O - E)^2 / E$ value is 0.07, indicating a negligible contribution to the overall chi-square statistic.

Moving to the "Agree" category, the observed frequency is 214, significantly lower than the expected frequency of 240, indicating a considerable underrepresentation of customers who agree with the statement. The $(O - E)^2 / E$ value for this category is 2.82, contributing notably to the chi-square statistic.

In the "Neutral" category, the observed frequency of 270 exceeds the expected frequency of 240, revealing a positive deviation of 30, suggesting more customers than expected selected the neutral option. The corresponding $(O - E)^2 / E$ value is 3.75, making a substantial contribution to the overall chi-square statistic.

For the "Disagree" category, the observed frequency of 245 is slightly above the expected frequency of 240, indicating a minor overrepresentation of customers disagreeing with the statement. The $(O - E)^2 / E$ value for this category is 0.10, making a negligible contribution to the chi-square statistic.

In the "Strongly Disagree" category, the observed frequency of 235 is slightly below the expected frequency of 240, suggesting a minor underrepresentation of customers strongly disagreeing with the statement. The corresponding $(O - E)^2 / E$ value is 0.10, contributing minimally to the chi-square statistic.

The cumulative chi-square statistic for this analysis is 6.84, computed by summing the individual contributions of each category. The degrees of freedom for this test, calculated as (number of categories - 1), result in 4 degrees of freedom for this analysis.

The null hypothesis (H0) posits no significant difference between observed and expected frequencies, implying customers' perceptions align with the anticipated distribution. Conversely, the alternative hypothesis (H1) suggests a significant difference exists, indicating a deviation from the expected distribution.

Conclusion: The chi-square analysis of customers' perspectives on credit facilities in North Gujarat uncovers a statistically significant difference between observed and expected frequencies. Notably, the "Agree" and "Neutral"

categories contribute substantially to this difference, emphasizing the necessity for banks to consider these findings in refining credit facility offerings to meet customer expectations and enhance overall satisfaction.

BANK PROVIDED SAFETY FOR MY FUND

Bank provided safety for my fund				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	223	240	-17	1.20
Agree	251	240	11	0.50
Neutral	253	240	13	0.70
Disagree	231	240	-9	0.34
Strongly Disagree	242	240	2	0.02
Total	1200	1200		2.77

The conducted chi-square test aimed to investigate the potential association between respondents' perceptions of the safety of their funds provided by the bank and the expected distribution across various response categories. Table 4.10 displays the observed (O) and expected (E) frequencies for each response category, along with the differences, squared differences, and contributions to the chi-square statistic.

The null hypothesis (H0) posited that there is no significant association between respondents' perceptions and the expected distribution, while the alternative hypothesis (H1) suggested the presence of such an association. The chi-square statistic was computed to be 2.77, considering the contributions from each category.

To interpret these findings, a significance level of 0.05 was chosen. Critical values from the chi-square distribution were consulted to compare against the calculated chi-square statistic. If the calculated statistic exceeded the critical value, the null hypothesis would be rejected, indicating a significant association. Conversely, if the calculated statistic fell below the critical value, the null hypothesis would not be rejected.

Upon analysis, it was determined that the chi-square statistic of 2.77 did not surpass the critical value at the 5% significance level. Consequently, based on the statistical assessment, there is insufficient evidence to reject the null hypothesis. This suggests that there is no significant association between respondents' perceptions of fund safety and the expected distribution.

It is essential to note that while statistical significance was not attained, the chi-square test does not elucidate the strength or direction of the association. For a more nuanced understanding of the factors influencing respondents' perceptions, additional analyses or complementary methods may be warranted.

In summary, the chi-square test results, at a 5% significance level, indicate no significant association between respondents' perceptions of fund safety and the expected distribution across response categories. Further exploration and research are recommended to gain deeper insights into the intricate dynamics of customer opinions concerning fund safety within the banking sector.

Bank staff attitude is friendliness				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	245	240	5	0.10
Agree	231	240	-9	0.34
Neutral	243	240	3	0.04
Disagree	247	240	7	0.20
Strongly Disagree	234	240	-6	0.15
Total	1200	1200		0.83

- Null Hypothesis (H0): There is no significant association between respondents' perceptions of bank staff friendliness and the expected distribution.
- Alternative Hypothesis (H1): There is a significant association between respondents' perceptions of bank staff friendliness and the expected distribution.

The data presents the observed (O) and expected (E) frequencies for each response category regarding the bank staff's friendliness, along with the differences, squared differences, and contributions to the chi-square statistic. The chi-square statistic is calculated to be 0.83.

To assess the statistical significance of the association, a significance level of 0.05 is chosen. Critical values from

the chi-square distribution are consulted to compare against the calculated chi-square statistic. If the calculated statistic exceeds the critical value, the null hypothesis is rejected, indicating a significant association. If the calculated statistic falls below the critical value, the null hypothesis is not rejected.

Upon analysis, the calculated chi-square statistic of 0.83 does not surpass the critical value at the 5% significance level. Consequently, based on the statistical assessment, there is insufficient evidence to reject the null hypothesis. This implies that there is no significant association between respondents' perceptions of bank staff friendliness and the expected distribution.

It is crucial to note that while statistical significance was not achieved, the chi-square test alone does not provide insights into the strength or direction of the association. Further investigations or supplementary methods may be needed for a comprehensive understanding of the factors influencing respondents' perceptions of bank staff friendliness.

In summary, the results of the chi-square test, at a 5% significance level, suggest no significant association between respondents' perceptions of bank staff friendliness and the expected distribution across response categories. Additional research endeavours are recommended to delve deeper into the intricate dynamics of customer opinions regarding the friendliness of bank staff.

Bank staff understands my needs				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	234	240	-6	0.15
Agree	226	240	-14	0.82
Neutral	252	240	12	0.60
Disagree	234	240	-6	0.15
Strongly Disagree	254	240	14	0.82
Total	1200	1200		2.53

- Null Hypothesis (H0): There is no significant association between respondents' perceptions of bank staff understanding their needs and the expected distribution.
- Alternative Hypothesis (H1): There is a significant association between respondents' perceptions of bank staff understanding their needs and the expected distribution.

It displays the observed (O) and expected (E) frequencies for different response categories concerning the bank staff's understanding of customers' needs. The chi-square statistic is computed to be 2.53.

The assessment of statistical significance involves comparing the calculated chi-square statistic with the critical value from the chi-square distribution at a chosen significance level. For this analysis, a significance level of 0.05 is selected. If the calculated statistic exceeds the critical value, the null hypothesis is rejected, indicating a significant association. If the calculated statistic falls below the critical value, the null hypothesis is retained. Upon examination, the calculated chi-square statistic of 2.53 does not surpass the critical value at the 5% significance level. Therefore, based on the statistical assessment, there is insufficient evidence to reject the null hypothesis. This implies that there is no significant association between respondents' perceptions of bank staff understanding their needs and the expected distribution. While statistical significance was not achieved, it is important to recognize that the chi-square test does not provide insights into the strength or direction of the association. Additional analyses or supplementary methods may be necessary for a comprehensive understanding of the factors influencing respondents' perceptions of the bank staff's understanding of their needs.In summary, the results of the chi-square test, at a 5% significance level, suggest no significant association between respondents' perceptions of bank staff understanding their needs and the expected distribution across response categories. Further exploration and research efforts are recommended to gain deeper insights into the intricacies of customer opinions regarding the understanding of their needs by bank staff.

Bank staff handles my problems efficiently				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	263	240	23	2.20
Agree	215	240	-25	2.60
Neutral	234	240	-6	0.15

Disagree	261	240	21	1.84
Strongly Disagree	227	240	-13	0.70
Total	1200	1200		7.50

- Null Hypothesis (H0): There is no significant association between respondents' perceptions of bank staff handling their problems efficiently and the expected distribution.
- Alternative Hypothesis (H1): There is a significant association between respondents' perceptions of bank staff handling their problems efficiently and the expected distribution.

The chi-square statistic is calculated to be 7.50. To assess statistical significance, the calculated chi-square statistic is compared with the critical value from the chi-square distribution at a chosen significance level. For this analysis, a significance level of 0.05 is employed. If the calculated statistic surpasses the critical value, the null hypothesis is rejected, indicating a significant association. If the calculated statistic falls below the critical value, the null hypothesis is retained. Upon examination; the calculated chi-square statistic of 7.50 exceeds the critical value at the 5% significance level. Consequently, based on the statistical assessment, there is sufficient evidence to reject the null hypothesis. This suggests a significant association between respondents' perceptions of bank staff handling their problems efficiently and the expected distribution across response categories.

While statistical significance is established, it is important to note that the chi-square test does not elucidate the strength or direction of the association. Additional analyses or complementary methods may be required for a more comprehensive understanding of the factors influencing respondents' perceptions of the efficiency in handling their problems by bank staff.

In conclusion, the results of the chi-square test, at a 5% significance level, indicate a significant association between respondents' perceptions of bank staff handling their problems efficiently and the expected distribution across response categories. Further exploration and research efforts are encouraged to delve deeper into the specific aspects contributing to customer opinions regarding the efficiency of bank staff in addressing their concerns.

Bank staff gives prompt attention to my needs				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	211	240	-29	3.50
Agree	246	240	6	0.15
Neutral	235	240	-5	0.10
Disagree	265	240	25	2.60
Strongly Disagree	243	240	3	0.04
Total	1200	1200		6.40

- Null Hypothesis (H0): There is no significant association between respondents' perceptions of bank staff giving prompt attention to their needs and the expected distribution.
- Alternative Hypothesis (H1): There is a significant association between respondents' perceptions of bank staff giving prompt attention to their needs and the expected distribution.

The chi-square statistic is calculated to be 6.40. To assess statistical significance, the calculated chi-square statistic is compared with the critical value from the chi-square distribution at a chosen significance level. For this analysis, a significance level of 0.05 is employed. If the calculated statistic surpasses the critical value, the null hypothesis is rejected, indicating a significant association. If the calculated statistic falls below the critical value, the null hypothesis is retained. Upon examination; the calculated chi-square statistic of 6.40 does not exceed the critical value at the 5% significance level. Therefore, based on the statistical assessment, there is insufficient evidence to reject the null hypothesis. This implies no significant association between respondents' perceptions of bank staff giving prompt attention to their needs and the expected distribution across response categories. It is essential to acknowledge that while the statistical analysis does not reveal a significant association, other factors or external variables might contribute to respondents' opinions on prompt attention from bank staff. Further investigations, such as qualitative assessments or in-depth interviews, may provide additional insights into the nuanced aspects influencing customer perceptions in this context. In conclusion, the results of the chi-square test, at a 5% significance level, do not indicate a significant association between respondents' perceptions of bank staff giving prompt attention to their needs and the expected distribution across response categories. Continued exploration and research may shed light on the multifaceted nature of customer experiences with bank staff.

Bank Provides me a good customer service				
	O	E	(O - E)	(O - E)^2 / E
Strongly Agree	245	240	5	0.10
Agree	230	240	-10	0.42
Neutral	245	240	5	0.10
Disagree	213	240	-27	3.04
Strongly Disagree	267	240	27	3.04
Total	1200	1200		6.70

Null Hypothesis (H0): There is no significant association between respondents' perceptions of the bank providing good customer service and the expected distribution.

- Alternative Hypothesis (H1): There is a significant association between respondents' perceptions of the bank providing good customer service and the expected distribution.

It illustrates the observed (O) and expected (E) frequencies for different response categories regarding the perceived quality of customer service provided by the bank. The chi-square statistic is calculated to be 6.70.

To assess statistical significance, the calculated chi-square statistic is compared with the critical value from the chi-square distribution at a chosen significance level. For this analysis, a significance level of 0.05 is employed. If the calculated statistic surpasses the critical value, the null hypothesis is rejected, indicating a significant association. If the calculated statistic falls below the critical value, the null hypothesis is retained.

Upon examination, the calculated chi-square statistic of 6.70 does not exceed the critical value at the 5% significance level. Therefore, based on the statistical assessment, there is insufficient evidence to reject the null hypothesis. This implies no significant association between respondents' perceptions of the bank providing good customer service and the expected distribution across response categories.

It's important to note that while the statistical analysis does not reveal a significant association, other external factors may influence respondents' opinions on the quality of customer service. Further investigations, such as qualitative assessments or customer feedback analysis, may provide additional insights into the dynamics of customer service satisfaction.

In conclusion, the results of the chi-square test, at a 5% significance level, do not indicate a significant association between respondents' perceptions of the bank providing good customer service and the expected distribution across response categories. Future research endeavours can explore the intricate factors contributing to customers' perceptions of service quality in the banking sector.

CONCLUSION

The study reveals that e-banking services have gained reasonable acceptance among customers of both public and private sector banks in the selected cities of Gujarat, though the level of utilization varies across different types of services. Mobile recharge, money transfer, online shopping, and rail ticket booking are found to be the most frequently used services, highlighting a preference for routine and convenience-oriented transactions. In contrast, services such as telephone bill payment, air ticket booking, and online investments are less commonly used, indicating hesitation or limited necessity among users. Private sector bank customers show higher levels of adoption and usage of e-banking compared to public sector bank customers, reflecting better digital infrastructure and customer engagement initiatives. Additionally, while a majority of users feel secure about online transactions, a notable portion still expresses concerns regarding financial safety, emphasizing the need for enhanced awareness and stronger cyber security measures. Overall, the study concludes that e-banking has become an essential component of modern banking behaviour, yet further technological improvements, customer education, and trust-building efforts are required to maximize its efficiency and reach in Gujarat's urban banking sector.

REFERENCES

[1] Auta, E. M. (2010). *E-banking in developing economy: Empirical evidence from Nigeria*. Journal of Applied Quantitative Methods, 5(2), 212–222.

[2] Kumbhar, V. M. (2011). *Factors affecting the customer satisfaction in e-banking: Some evidences form Indian banks*. Management Research and Practice, 3(4), 1–14.

[3] Malhotra, P., & Singh, B. (2010). *An analysis of Internet banking offerings and its determinants in India*. Internet Research, 20(1), 87–106.
[4] Singh, S. (2020). *Customer perception towards internet banking: A study of selected banks in India*. International Journal of Management, 11(9), 1–12.
[5] Mittal, M., & Dhingra, S. (2012). *A study of customer satisfaction in Internet banking*. International Journal of Computing and Business Research, 3(1), 45–55.
[6] Sharma, S., & Kaur, R. (2018). *Adoption of mobile banking services: A study in Indian context*. IOSR Journal of Business and Management, 20(2), 22–29.
[7] Uppal, R. K. (2011). *Internet banking: Problems and future prospects in Indian banks*. Global Journal of Business Management, 5(1), 23–36.
[8] Reserve Bank of India. (2023). *Report on Trend and Progress of Banking in India*. RBI Publications.
[9] Deloitte. (2022). *Digital Banking Maturity Study – India Report*. Deloitte Insights.
[10] PwC. (2021). *Indian Banking 2025: Digital transformation and growth*. PricewaterhouseCoopers India.
[11] Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). *Mobile banking adoption in the developing world*. Telematics and Informatics, 34(2), 299–313.
[12] Yadav, R., & Mahara, T. (2019). *Customer adoption of e-banking in India: Impact of perceived risk and trust*. Journal of Internet Commerce, 18(3), 203–220.
[13] Internet & Mobile Association of India (IAMAI). (2023). *Digital Payments Report*. IAMAI Publications.
[14] Siddiqui, S. (2008). *Internet banking in India: Issues and prospects*. Foundation of Computer Science, 5(5), 41–51.
[15] Zeithaml, V. A. (2018). *Consumer behavior and technology-based service adoption*. Journal of Marketing Research, 55(3), 422–438.
[16] Parasuraman, A., Zeithaml, V., & Berry, L. (1988). *SERVQUAL: A multiple-item scale for measuring consumer service quality*. Journal of Retailing, 64(1), 12–40.
[17] Kapoor, S. (2020). *Growth of digital banking in India: Challenges and opportunities*. International Journal of Research in Commerce and Management, 11(5), 15–22.
[18] Gupta, P. (2013). *Internet banking in India: Consumer perception and preferences*. International Journal of Marketing and Technology, 3(12), 150–160.
[19] McKinsey Global Institute. (2021). *Digital India: Technology to transform a connected nation*. McKinsey & Company.
[20] Ibrahim, S. (2016). *Consumer trust in e-banking: A literature review*. International Journal of Commerce and Management Research, 2(7), 8–12.
[21] Jain, A. & Bala, K. (2021). *Digital financial services and changing customer behavior in India*. Journal of Banking & Finance Research, 10(1), 33–48.
[22] World Bank. (2023). *Global Findex Database: Financial inclusion and fintech adoption*. World Bank Publications.