International Journal of Science, Strategic Management and Technology
Volume **02** Issue **03** March-**2026** | ISSN: **3108-1762 (Online)** | Impact Factor: 3.8
An International, Peer-Reviewed, Open Access Scholarly Journal Indexed in recognized academic databases

A Study on Impact of Digital Booking and Online Payment on Lpg Distrbution

Sri Nandhini R S, MBA Student, Excel Engineering College, Anna University, Namakkal

Mohanasundaram R, Professor, Excel Engineering College, Anna University, Namakkal

Deepak S, Head of the Department, Excel Engineering College, Anna University, Namakkal

https://doi.org/ 10.55041/ijsmt.v2i3.145

Cite this Article: S, S. N. R. & S, N. D. (2026). A Study on Impact of Digital Booking and Online Payment on Lpg istribution. International Journal of Science, Strategic Management and Technology, *02*(03). https://doi.org/10.55041/ijsmt.v2i3.145

ABSTRACT:

The integration of digital booking and online payment services has greatly impacted the LPG distribution industry in terms of efficiency, transparency, and ease of use. With the advancement of smartphones, internet accessibility, and government initiatives for cashless transactions, consumers are increasingly using mobile applications, web portals, and online payment services for LPG cylinder bookings and payments. Online services assist in reducing manual labour, preventing billing errors, and faster processing of orders, thus enhancing distributor-customer interaction and services. Despite the benefits, several contemporary issues impact the effectiveness of online LPG services. Consumers are faced with problems such as payment gateway errors, delayed confirmation of transactions, refund delays in case of failed transactions, server down issues during peak hours of booking, OTP authentication errors, and application usability. Additionally, digital literacy issues are common among rural and senior citizens, and network connectivity issues often disrupt the booking process. Moreover, cybersecurity threats, data security issues, and a lack of trust in online transactions often discourage consumers from availing online services. This paper explores the effects of online booking and online payment services on efficiency, delivery time, and customer satisfaction, and analysis of the contemporary issues and their effects on technology acceptance among LPG. The findings aim to provide practical recommendations to improve reliability, accessibility, and user confidence in digital LPG distribution systems.

Keywords: Digital Booking, Online Payment, LPG Distribution, Customer Satisfaction, Service Efficiency, Digital Challenges, Technology Adoption.

1. INTRODUCTION AND REVIEW OF LITERATURE

1.1 Background of the Study

The LPG distribution industry is a crucial one when it comes to the provision of clean cooking fuel to residential and commercial consumers. The booking and payment process for LPG cylinders was carried out manually by making phone calls, conducting cash transactions, and maintaining paper records, which resulted in delays, errors, and a lack of transparency. However, with the development of digital technology and increased internet accessibility, the LPG distribution industry has adopted online booking systems and online payment systems to make the process more efficient and convenient. The government's efforts to promote cashless transactions and digital service delivery have also

contributed to the increased use of online booking systems and online payment systems. Customers can now book their LPG cylinders online using mobile applications, websites, and automated systems, which has minimized waiting times and enabled better service tracking. However, there are also issues associated with the transition from traditional systems to digital systems, including technical problems, payment failures, and digital illiteracy. Hence, it is necessary to examine the impact of digital booking systems and online payment systems on the performance and customer satisfaction of the LPG distribution industry.

1.2 Research Gap

The existing research on digital services is primarily focused on the adoption of online payments in general, e-commerce platforms, and banking apps, but there is a lack of research on digital booking and online payment services in the LPG distribution industry. Most of the existing research is focused on the factors of technology acceptance, 1.3 such as usefulness and ease of use, but there is no in-depth analysis of the operational outcomes of the delivery efficiency, distributor workload, and real-time service performance. Moreover, the existing research is not considering the real-life issues faced by the customers, such as payment failures, refund delays, server down times, and connectivity problems in rural areas. There is also a lack of comparative analysis of the existing booking systems and digital systems in terms of customer satisfaction and service reliability. Moreover, the distributor's point of view and the operational challenges at the field level are also not explored to a great extent. Therefore, there is a need for a comprehensive study to assess both customer and distributor experiences and understand how the contemporary digital issues affect the efficiency of LPG distribution services.

1.3 Research Problem:

The implementation of digital booking and online payment solutions in the LPG distribution industry is expected to enhance efficiency, transparency, and customer convenience. Nevertheless, despite advances in technology, there exist some operational and customer- related issues that continue to impact the efficiency of digital platforms. Customers often face problems such as failed payments, confirmation delays, refund delays, server down times, and difficulties with mobile applications. In the rural and semi-urban regions, poor internet connectivity and low digital literacy rates further limit the use of digital platforms. At the distributor’s end, technical issues and integration problems can cause disruptions in order processing and delivery timings. Thus, the primary research problem is to investigate whether digital booking and online payment platforms can actually improve LPG distribution efficiency and customer satisfaction, and to determine the primary challenges that impede the efficiency of digital platforms.

1.4 Significance of the Study

Analysis of digital payment and booking in the distribution of LPG is important because LPG is a basic domestic product, and inefficiency will directly impact people’s lives. The analysis of digital impact will enable the assessment of whether digital technology is actually effective in improving the speed, transparency, and customer satisfaction of services. It is important to identify the issues of failed payments, refund issues, technical issues, and digital illiteracy to develop effective solutions. The results will help distributors improve their performance and minimize disruptions in services. It will also help improve digital infrastructure, especially in rural areas, by policymakers and service providers. The study will help improve efficiency, build customer confidence in digital services, and ensure smooth LPG distribution services.

2. OBJECTIVE OF THE STUDY

The main aim of this research is to investigate the effects of digital booking and payment systems on the efficiency and effectiveness of LPG distribution services. The research will aim to assess the effects of these digital platforms on the delivery time, accuracy of transactions, and overall customer satisfaction. The research will also aim to determine the

factors that influence the adoption of digital booking and payment systems by LPG consumers. The third aim of this research is to analyze the operational advantages and disadvantages of digital systems experienced by LPG distributors after the implementation of digital systems. The

research will also aim to investigate the current issues associated with digital LPG distribution services, including payment failures, refund delays, server breakdowns, and digital illiteracy. The final aim of this research is to offer recommendations to enhance the reliability, accessibility, and user confidence in digital LPG distribution services.

3. METHODOLOGY

3.1 Research Design

The research design used in this study is descriptive. This design is appropriate for the analysis of the effects of digital booking and online payment on the LPG distribution services. The design will help the researcher to describe the efficiency, transparency, and satisfaction related to digital systems. The research will concentrate on both the positive results and the real-life challenges faced by people. The design will also assist in creating ideas for enhancing digital service delivery in LPG distribution.

3.2 Source of Data

The research will depend on primary data sources. The primary data will be collected from LPG consumers and selected staff members of the distributors. A structured questionnaire will be used to collect data from the respondents. The data collected will be related to the use of digital booking and online payment. The respondents will express their experiences, satisfaction, and challenges faced during the process. Secondary sources, such as reports, articles, and official websites, will be used to supplement the background of the research.

3.3 Sampling Technique

Convenience sampling technique is used for selecting the respondents for the study. The participants are selected based on their accessibility and willingness to share information. The technique is appropriate for the study because of the time and resource limitations of the study. The technique enables easy data collection from the available LPG consumers. The sample is selected from the urban and semi-urban regions to collect diverse opinions. Although the technique is simple, it enables the effective completion of the study.

3.4 Sample Size

The total sample size of 100 respondents is considered for the study. Most of the respondents are LPG consumers who make use of digital booking and payment systems. A few representatives of the distributors are also selected to collect operational views. The sample size selected is sufficient for performing percentage and statistical analysis. The sample size enables the collection of significant results within the context of the study.

3.5 Tools of Data Collection

The structured questionnaire is employed as the main tool for data collection. The questionnaire is prepared with closed-ended and Likert scale questions to determine the level of satisfaction and opinions. The tool helps in maintaining uniformity and consistency in the collected responses. The questions are framed to include booking processes, payment processes, service delivery, and problems encountered. Direct contact with the respondents enables the collection of credible data. The tool makes the process of classifying and tabulating responses easy.

3.6 Tools of Analysis

The collected data is analyzed using statistical tools like percentage analysis and mean score analysis. The techniques enable to interpret the responses and levels of satisfaction. The chi- square test is employed to test the relationship between certain variables. Tables and diagrams are employed to display the results effectively. The analysis tool enables the researcher to interpret the results accurately. It assists in arriving at logical conclusions based on the collected data.

3.7 Period of Study

The study period is three months. The duration of the study includes data collection, analysis, and interpretation. The time is sufficient to complete each phase of the study systematically. The duration of the study provides ample time to interact with the respondents and analyze the responses. The study period is appropriate for an academic project based on primary data collection. The study period allows the completion of the project within the guidelines of the institution.

3.8 Limitations of the Study

The study is limited to a geographical location and chosen LPG consumers. The study has a sample size of 100 respondents. The study may not be representative of the total population. The responses may be affected by personal biases or individual perceptions. The time constraints do not allow a more comprehensive survey. Technological variations are not explored in depth.

4. FINDINGS AND DISCUSSION

4.1 Objective Wise Analysis of Findings and Interpretation

The study found that the online booking and payment services have improved the efficiency of services and reduced the time taken for most LPG consumers to book. Most of the respondents were satisfied with the speed and clarity of transactions, showing a positive attitude towards the online platform. The results also indicate that the online platform has reduced the manual work and errors in billing for most distributors. However, the results show that factors such as failed payments, late refunds, server breakdowns, and OTP errors have a negative impact on user experience. The results also indicate that most rural respondents face connectivity and digital literacy issues, which limit the full adoption of digital platforms. The statistical analysis reveals that there is a significant relationship between ease of use and customer satisfaction.

4.2 Comparison with Previous Studies:

The previous studies on the adoption of digital payment systems have emphasized the importance of perceived usefulness, ease of use, and trust as factors that contribute to the acceptance of digital platforms by customers. Similar to previous studies on banking and e- commerce, the current study also supports the importance of convenience, speed, and transparency as factors that contribute to the adoption of digital booking and payment systems in LPG distribution.

Unlike previous studies, the current study also emphasizes the importance of operational challenges in the LPG sector, including the failure of payment gateways, refund delays, server down times during peak booking hours, and connectivity problems in rural areas. While previous studies were mainly focused on customer perceptions, the current study also focuses on the operational challenges at the distributor level.

4.3 Implication and Limitations of the Study:

The implications of the study suggest that the use of digital booking and payment systems has a positive impact on efficiency, transparency, and customer satisfaction in LPG distribution. The study suggests that the distributors can implement the findings of the study to improve their services and minimize errors. The policymakers and service providers should concentrate on improving the digital infrastructure and payment gateway reliability. The study also emphasizes the need for improved cybersecurity to gain the trust of users.The limitations of the study include the geographical location and the sample size of 100 participants, which may not be representative of the whole population. The study may be affected by time constraints and respondent bias.

5. CONCLUSION

5.1 Summary of Key Findings

The report concludes that the digital booking and payment system has greatly enhanced the efficiency and transparency of the LPG distribution services. The majority of the respondents are in favor of the digital system because of its convenience and ease of tracking transactions. The results show a positive correlation between ease of use and customer satisfaction. The digital system has minimized errors and reduced the workload of the distributors. But still, there are some issues like failed payments, late refunds, server breakdowns, and lack of digital literacy in rural areas that are impacting the digital system.

5.2 Contributions of the Study

The study contributes to the understanding of the practical implications of digital transformation in the LPG distribution industry. The study gives insights into the customer and distributor views of digital booking and online payment systems. The study brings out the industry-specific challenges that were not investigated in previous studies. The study validates the theories of technology adoption by establishing the importance of perceived usefulness and ease of use. The study also provides recommendations on how to improve digital service quality and build trust.

5.3 Suggestions for Future Research

Future research can be done on extending the research study to a wider geographical area with a larger sample size to obtain more generalizable findings. Comparative studies between rural and urban consumers can also help in gaining more insights into the differences in digital adoption. Future research can also be done on the long-term effects of digital systems on cost efficiency and distributor profitability. Future research studies can also be done on more advanced technologies such as AI-powered customer services and automated tracking of LPG delivery.

6. REFERENCE

[1]. Vineethan, T., Babu, P., Praveen, M. V., & Pushkaran, V. T. A. (2025). Judging the blazes of satisfaction: An analytical study about domestic LPG consumers in Kerala, India. *Asian Research Journal of Arts & Social Sciences, 23*(9), 203–213.

[2]. Rajkumar, S., Venkatanathan, S., & Prasanth, P. (2024). Automated LPG monitoring and rebooking system using IoT – A review. *Journal of IoT in Social, Mobile, Analytics, and Cloud, 6*(3), 254–260.

[3]. Sharma, S., & Gupta, M. (2020). Digitalization of LPG distribution and customer service efficiency in India. *International Journal of Supply Chain Management, 9*(4), 129–136.

[4]. Rani, S., & Mishra, P. (2021). Role of e-governance in LPG subsidy and distribution reforms in India. *Journal of Governance and Public Policy, 8*(2), 45–58.

[5]. Kumar, V., & Bansal, S. (2022). Digital platforms and consumer satisfaction in gas distribution services. *International Journal of Energy Sector Management, 16*(5), 893–909.

[6]. Singh, A., & Yadav, R. (2020). E-service quality and customer satisfaction in utility distribution systems. *Journal of Retailing and Consumer Services, 54*, 102032.

[7]. Srivastava, M., Choudhary, N., & Sharma, B. (2025). Literature review on digital payment adoption in the LPG sector. *International Advanced Research Journal in Science, Engineering and Technology, 12*(5).

[8]. Gupta, J., Sharma, R., & Verma, A. (2020). Smart LPG monitoring and automatic booking system using IoT. *International Journal of Engineering Research & Technology, 9*(4).

[9]. Pratama, R., Widodo, A., & Nugroho, Y. (2021). Optimization of LPG distribution for a multiplatform-based LPG marketplace. *International Journal of Engineering, Science and Information Technology, 1*(4), 1–7.

[10]. Krishnan, P., & Ravi, S. (2025). A focus on technology advancements in LPG: Impact on distribution and utilization of clean energy sources. *Academy of Marketing Studies Journal, 29*(2).