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Local LPG Dealership towards a Consumer-Centered Project Management-Based Model

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ABSTRACT

This study examined consumer perceptions of local liquefied petroleum gas (LPG) dealership operations as a basis for proposing a Consumer-Centered Project Management-Based Model. Guided by the Input–Process–Output framework, a quantitative, cross-sectional descriptive-correlational design examined associations among five consumer-centered service dimensions, five perceived operational domains, and five consumer outcomes at one licensed dealership in Dasmariñas City, Cavite, Philippines. A researcher-developed questionnaire administered through Microsoft Forms yielded responses from 241 purposively selected consumers (233 household and eight microenterprise consumers). Forty-five rating statements formed fifteen three-item construct scores analyzed using descriptive statistics and ten multiple linear regressions in two stages, with HC3 heteroskedasticity-consistent inference and Benjamini–Hochberg adjustment across 50 slope tests ($q < .05$). All ten joint models were significant ($p < .001$). In Stage 1, the service dimensions jointly accounted for 55.2%–64.7% of the variation in operational-domain scores; Technology-Enabled Service Delivery retained positive associations with all five domains and Customer Interaction and Communication Quality with four. In Stage 2, the operational domains accounted for 54.7%–62.4% of the variation in consumer outcomes; Project Management Practices was retained for Customer Satisfaction and Consumer Behavior Patterns, and Service Processes had the largest retained coefficient for Customer Trust and Safety Perception and the sole retained coefficient for Perceived Convenience and Service Speed. The findings informed a proposed order-to-closure management cycle. Given the single-dealership design, purposive sample, and sensitivity to uniform response patterns, the model is offered as a context-specific, exploratory framework for subsequent evaluation rather than a causal or sector-wide claim.

Keywords: *Consumer-Centered Service, LPG Dealership Operations, Project Management Practices, Consumer Perceptions, Service Processes, Philippines*

INTRODUCTION

In the 2020 Census of Population and Housing, liquefied petroleum gas (LPG) was the fuel used most often for cooking by 47.9% of Philippine households, the largest share among the reported fuel categories (Philippine Statistics Authority, 2023). Local dealerships connect product distribution with consumer-facing activities such as receiving orders, arranging deliveries, communicating service information, and responding to concerns. LPG dealership operations also carry specific regulatory responsibilities: Republic Act No. 11592, the LPG Industry Regulation Act, requires industry participants to secure a license to operate and requires dealers to sell cylinders with authorized LPG seals, provide appropriate measuring devices, ensure the correct weight of delivered cylinders, and provide servicing, delivery, and technical assistance to end-consumers (Republic Act No. 11592, 2021).

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At the dealership level, order handling, inventory availability, delivery scheduling, safety-related procedures, and customer communication form connected parts of the service encounter. Operations management provides concepts for examining process design, planning and control, inventory, quality, and risk (Slack et al., 2022), while service-quality research identifies reliability, responsiveness, and assurance among the dimensions of perceived service quality (Parasuraman et al., 1988). Project management provides an additional organizing perspective: the Project Management Institute (PMI, 2025) emphasizes value delivery, accountable leadership, risk, and the tailoring of practices to organizational circumstances, and its process groups—initiating, planning, executing, monitoring and controlling, and closing—offer a structure that may be adapted to recurring dealership operations (PMI, 2022).

Existing sources address these concerns from different angles. The Philippine LPG preference study reviewed here examined attributes such as brand, price, delivery time, and tank appearance through conjoint analysis (Armea et al., 2022), while regulatory sources define industry obligations. These sources do not answer how consumer ratings of service practices and operational domains are associated with consumer outcomes at a local dealership, nor how small-firm project management concepts (Marcelino-Sádaba et al., 2014; Turner et al., 2010) might be adapted to recurring LPG service activities. The study was conducted within the service area of Tommy LPG, a licensed multi-brand 11-kg LPG dealership in Barangay San Antonio de Padua I, Dasmariñas City, Cavite, whose coverage of eleven barangays (designated Area E in this study) had a combined 2020 population of 45,470 residents (Provincial Government of Cavite, n.d.).

Guided by the Input–Process–Output framework, this study examined consumer assessments of the dealership as a basis for proposing a Consumer-Centered Project Management-Based Model. Specifically, it sought to answer the following questions: (a) To what extent do the consumer-centered service dimensions—Service Delivery Practices, Risk and Safety Management Implementation, Process Implementation Consistency, Customer Interaction and Communication Quality, and Technology-Enabled Service Delivery—predict the operational domains of Operational Logistics, Safety Compliance Practices, Project Management Practices, Service Processes, and Digital Transformation? (b) To what extent do the operational domains predict the consumer-centered outcomes of Customer Satisfaction, Customer Trust and Safety Perception, Customer Loyalty, Consumer Behavior Patterns, and Perceived Convenience and Service Speed? and (c) Based on the findings, what Consumer-Centered Project Management-Based Model may be proposed for local LPG dealership operations? Two null hypotheses were tested: that the service dimensions do not significantly predict the operational domains ($H_0 1$), and that the operational domains do not significantly predict the consumer-centered outcomes ($H_0 2$). The findings are intended to inform dealership owners and managers, consumers, regulatory agencies and local government units, and future researchers, while recognizing that a cross-sectional consumer survey does not establish causal effects or the effectiveness of the proposed model.

Literature Review

Project Management in Small and Microenterprises

Project management concepts require careful adaptation to a dealership's recurring sales and delivery activities. Turner et al. (2010) reported qualitative research involving micro, small, and medium-sized firms in four countries whose participants sought less bureaucratic forms of project management than traditional approaches designed for larger organizations, with medium-sized firms requiring more structure as staff roles became more specialized. Marcelino-Sádaba et al. (2014) developed a project-risk methodology for small firms, drawing on research with Spanish companies and testing the approach on five projects, and addressed difficulties that smaller firms encounter in using project-risk approaches.

Professional guidance similarly emphasizes tailoring. The eighth edition of the PMBOK Guide presents principles and performance domains and addresses adapting practices to the organization and operating environment (PMI, 2025), while Process Groups: A Practice Guide describes Initiating, Planning, Executing,

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Monitoring and Controlling, and Closing within a process-based approach (PMI, 2022). These are process groups rather than necessarily sequential phases, and a routine transaction does not become a conventional project merely because it is scheduled and monitored.

In this study, the measured Project Management Practices domain has a narrower scope than these professional frameworks. Its three statements concern perceived delivery planning and scheduling, the handling of service problems, and overall operational management. Consumer agreement with those statements indicates perceived coordination and management; it does not document use of the PMI process groups, project governance, or an implemented order-to-closure cycle.

Consumer-Centered Service Delivery and Customer Experience

Parasuraman et al. (1988) developed SERVQUAL to assess perceived service quality through reliability, responsiveness, assurance, empathy, and tangibles, providing a vocabulary for interpreting delivery, communication, and safety-related encounters. Lemon and Verhoef (2016) reviewed customer experience across multiple touchpoints and channels throughout the customer journey; in LPG delivery, possible touchpoints include ordering, confirmation, delivery updates, receipt of the cylinder, payment, and later assistance. Customer relationship management provides a complementary organizational perspective on how information from successive contacts could support service continuity and problem resolution (Kumar & Reinartz, 2018).

Parasuraman et al. (2005) developed E-S-QUAL for electronic service quality, identifying efficiency, fulfillment, system availability, and privacy, and highlighted the distinction between access to a channel and successful fulfillment of a request. In the Philippine LPG context, Armea et al. (2022) examined household preferences in Luzon through conjoint analysis of brand, price, free installation service, delivery time, tank appearance, regulator type, and weight, finding that brand had the greatest reported importance, followed by tank appearance and price.

These concepts informed the study's service dimensions, although the researcher-developed questionnaire used its own constructs and did not administer or validate the complete SERVQUAL or E-S-QUAL instruments. Customer Interaction and Communication Quality concerns ease of contact, polite and respectful communication, and overall communication satisfaction, while Technology-Enabled Service Delivery concerns convenient phone or online ordering, prompt digital responses, and easier ordering through technology.

Operational Domains and Service Operations Management

Slack et al. (2022) organize operations management around the design, planning, delivery, and improvement of operations, with performance considerations including quality, speed, dependability, flexibility, and cost. Rushton et al. (2022) address integrated logistics, customer service, distribution, inventory, and related supply-chain activities, placing delivery within a wider system of product movement and information coordination. Lim et al. (2018) reviewed 47 articles on last-mile logistics and developed a framework connecting contingency variables with logistics configurations, supporting the examination of delivery as part of a designed service system rather than speed as an isolated attribute.

In this study, Operational Logistics is represented by consumers' ratings of LPG availability, accurate and careful delivery, and overall delivery reliability. The questionnaire also distinguishes Process Implementation Consistency, which concerns consistency across orders and delivery staff, from Service Processes, which concerns simple ordering, correct processing, and overall process efficiency. These are consumer ratings of the experienced service result and do not independently establish stock-record accuracy, route efficiency, or vehicle utilization.

Safety Compliance and Digital Transformation

Republic Act No. 11592 (2021) establishes the regulatory framework for safe LPG industry operations: Section 17 requires participants to observe safe handling practices, Section 21 assigns dealers responsibilities involving authorized seals, measuring devices, correct product weight, servicing, delivery, and technical assistance, and Section 24 requires a license to operate for the relevant activity and site. The implementing rules provide further requirements for industry participation (Department of Energy & Department of Trade and

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Industry, 2022), and the Department of Energy (2025) reiterated the need for LPG industry participants to comply with the Act and applicable rules on licenses, permits, certifications, and safety and quality standards.

Digital change in small enterprises likewise requires precise interpretation. Verhoef et al. (2021) distinguish digitization, digitalization, and digital transformation, linking broader transformation to organizational capabilities, structures, and performance measures. Eller et al. (2020) examined information technology, employee skills, and digital strategy among 193 SMEs and found these resource dimensions to be positively related to digitalization, emphasizing organizational preparation rather than technology adoption in isolation.

Accordingly, the study's safety and digital constructs are consumer assessments. Risk and Safety Management Implementation and Safety Compliance Practices concern perceived safe handling, guidance, authenticity, and adherence to safety requirements, and do not constitute regulatory inspection. Similarly, the Digital Transformation domain concerns perceived use of digital tools, order-tracking updates, and digital support for the service experience, rather than organizational digital maturity.

Consumer-Centered Outcomes

Oliver (2015) examines satisfaction as a consumer response to consumption experience, including the roles of expectations and disconfirmation. Santos Neto et al. (2022) examined satisfaction in residential electricity distribution, finding that trust, quality, and value accounted for 74.4% of the variation in satisfaction, illustrating a multiconstruct approach to evaluating an essential energy service. Dick and Basu (1994) conceptualize loyalty through the relationship between relative attitude and repeat patronage, distinguishing favorable preference from purchasing that may occur despite weak attachment.

Berry et al. (2002) conceptualize service convenience in terms of the time and effort consumers expend and distinguish decision, access, transaction, benefit, and post-benefit convenience. In this study, Customer Satisfaction combines overall satisfaction, convenience of ordering and delivery, and meeting of expectations; Customer Trust and Safety Perception is one combined construct; Customer Loyalty comprises intention to continue buying, willingness to recommend, and preference over other dealers; Consumer Behavior Patterns combines reported purchase influence, problem reporting, and encouragement to remain; and Perceived Convenience and Service Speed covers quick and easy ordering, reasonable delivery time, and perceived savings in time and effort.

These outcome scores overlap in content—for example, convenience appears in both satisfaction and convenience-and-speed items—which calls for restraint when interpreting differences among coefficients. In the broader enterprise context, MSMEs accounted for 99.63% of covered Philippine establishments in 2024, with microenterprises accounting for 90.66% (Daug, 2026), and regional evidence emphasizes attention to the diverse resources and needs of small enterprises (Asian Development Bank, 2024).

Theoretical and Conceptual Framework

The study drew on General Systems Theory, the expectation-disconfirmation model, and a project management framework. Von Bertalanffy (1968) describes systems in terms of interacting components and an open-system perspective on exchanges with the environment, which directs attention to connections among product supply, orders, personnel, delivery, and customer contact in a dealership. Oliver (1980) proposed a model relating satisfaction to expectations and expectancy disconfirmation, with satisfaction linked to attitude change and purchase intention, which most directly informs the Customer Satisfaction construct. PMI guidance (2022, 2025) supplies concepts for tailoring management practices and organizing the proposed service cycle.

As shown in Figure 1, the conceptual framework organizes the variables through the Input–Process–Output model. The five consumer-centered service dimensions serve as predictors in Stage 1; the five operational domains serve as criterion variables in Stage 1 and predictors in Stage 2; and the five consumer-centered outcomes serve as criterion variables in Stage 2. All fifteen constructs are consumer-rated, and the arrows identify the

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hypothesized associations examined in the two regression stages rather than temporal order, causation, or statistical mediation.

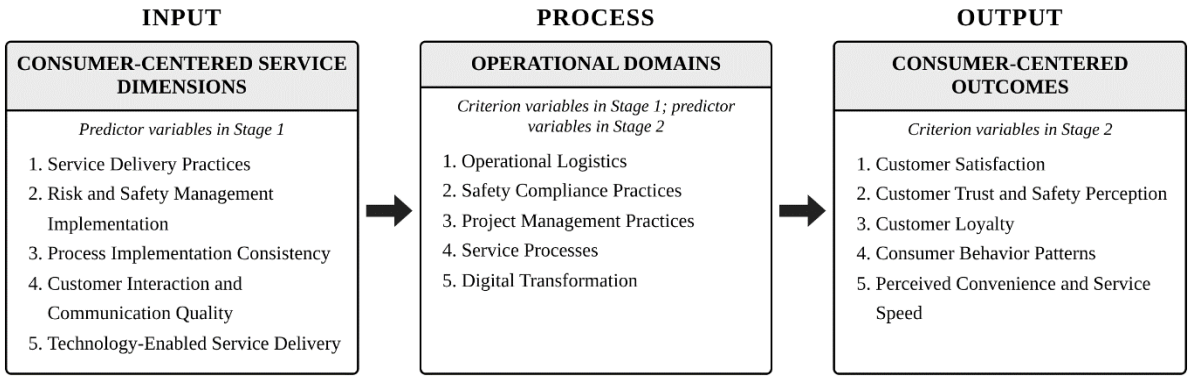


Figure 1. *Conceptual Framework of the Study (IPO Model)*

METHODS

Research Design

The study used a quantitative, cross-sectional descriptive-correlational design. Descriptive statistics summarized consumers' ratings of five consumer-centered service dimensions, five operational domains, and five consumer-centered outcomes. Guided by the Input–Process–Output framework, Stage 1 comprised five multiple linear regressions, each entering the five service-dimension scores simultaneously to predict one operational-domain score, and Stage 2 comprised five regressions, each entering the five operational-domain scores simultaneously to predict one consumer-outcome score. The stages were analytical groupings rather than successive observation periods, and the models' estimated associations within the observed sample.

Research Locale

The study was conducted within the service area of Tommy LPG, a licensed multi-brand dealership selling 11-kg LPG cylinders in Barangay San Antonio de Padua I, Dasmariñas City, Cavite. Its service coverage, designated Area E for this study, comprised eleven barangays: Emmanuel Bergado I and II, San Lorenzo Ruiz I and II, San Luis I and II, Santa Cruz I and II, San Antonio de Padua I and II, and Santa Maria. Area E identifies the service coverage examined and is not an official geographic classification.

Participants and Sampling Technique

The respondents were 241 consumers with direct service experience of the dealership: 233 household consumers purchasing LPG for domestic use and eight microenterprise consumers using LPG in small-business activities (Table 1). Purposive sampling was used to recruit consumers with direct and recent experience. Eligibility required purchase of an 11-kg LPG cylinder from the dealership within the preceding twelve months, residence or business operation within its service area, and agreement to participate. Industrial and commercial bulk LPG services, autogas, cylinder-refilling plants, and other LPG distribution segments were excluded.

Table 1. *Distribution of Respondents by Consumer Type*

Respondent Type	Frequency	Percent
Household consumers	233	96.7
Microenterprise consumers	8	3.3
Total	241	100.0

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Research Instrument

The primary instrument was a researcher-developed structured consumer questionnaire informed by the conceptual framework and reviewed literature. It contained five categorical profile questions and 55 agreement statements rated on a five-point scale (1 = Strongly Disagree to 5 = Strongly Agree). Forty-five statements formed fifteen equally weighted three-item mean scores: five service dimensions (Part II), five operational domains (Part III), and five consumer-centered outcomes (Part V). Ten additional planning-and-control statements (Part IV) were administered but excluded from the construct scores and regressions. Mean scores were described using the rating scale in Table 2.

Table 2. *Rating Scale and Interpretation*

Mean Range	Descriptive Rating	Interpretation
4.50–5.00	Very High	Mean responses approach Strongly Agree.
3.50–4.49	High	Mean responses indicate overall agreement.
2.50–3.49	Moderate	Mean responses are near the neutral midpoint.
1.50–2.49	Low	Mean responses indicate overall disagreement.
1.00–1.49	Very Low	Mean responses approach Strongly Disagree.

Experts in project management, business management, and research methodology reviewed the questionnaire for relevance, clarity, and alignment with the study variables, and their comments informed revisions (Lynn, 1986). Internal consistency of the fifteen three-item scales in the main dataset ranged from $\alpha = .584$ to .744, with Service Delivery Practices ($\alpha = .584$) and Customer Satisfaction ($\alpha = .616$) showing comparatively limited consistency.

Data Gathering Procedure

The researcher obtained dealership permission to facilitate dissemination of the Microsoft Forms questionnaire to household and microenterprise consumers within Area E. The invitation and consent wording described the study purpose, voluntary participation, confidentiality, and an electronic choice to agree or decline. Responses were exported from Microsoft Forms for coding and analysis, yielding 241 distinct submissions, each with responses to all 45 modeled ratings. Thirty-five respondents selected the same value across all 55 ratings (twenty selected five, fourteen selected four, and one selected three); because uniform ratings alone did not establish invalid responses, they remained in the primary analysis, and a supplementary sensitivity analysis used the other 206 responses.

Data Analysis

Frequencies and percentages described the respondent distribution, while means and standard deviations summarized the construct scores, and Cronbach's alpha assessed internal consistency. Ten ordinary least squares multiple regressions addressed the first two research questions, each with five predictors entered simultaneously and joint F tests with 5 and 235 degrees of freedom interpreted at $\alpha = .05$. Individual coefficient inference used HC3 heteroskedasticity-consistent standard errors (MacKinnon & White, 1985), and Benjamini–Hochberg adjustment was applied across all fifty slope tests (Benjamini & Hochberg, 1995), with $q < .05$ identifying retained conditional associations. The third research question was addressed by synthesizing the survey findings and reviewed literature to propose the model and its order-to-closure management cycle.

Ethical Consideration

Participation was voluntary. The electronic consent wording described the research purpose and the option to decline or stop before submission without penalty, and asked participants to confirm that they were at least eighteen years old or legally able to provide consent. No compensation was offered. The consent notice stated that identifying information would be collected only if voluntarily provided, that data would be kept in password-

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protected storage, and that access would be limited to the researcher and authorized academic advisers. Findings were reported in aggregate, and identifying fields were not used to form the construct scores or regression models.

RESULTS AND DISCUSSION

Consumer Ratings of Service Dimensions, Operational Domains, and Outcomes

Table 3 presents the descriptive statistics and internal consistency of the fifteen construct scores. Ratings were favorable and closely clustered, all within the High range: 4.353–4.454 for the service dimensions, 4.373–4.412 for the operational domains, and 4.358–4.420 for the outcomes. Service Delivery Practices obtained the highest service-dimension mean (4.454) and Process Implementation Consistency the lowest (4.353); Digital Transformation had the highest operational-domain mean (4.412) and Project Management Practices the lowest (4.373); and Perceived Convenience and Service Speed was the highest outcome (4.420), while Customer Satisfaction was the lowest (4.358).

Table 3. *Construct Descriptives and Internal Consistency*

Construct	Mean	SD	α	Rating
Service Delivery Practices (SDP)	4.454	0.391	.584	High
Risk and Safety Management Implementation (RSM)	4.362	0.399	.708	High
Process Implementation Consistency (PIC)	4.353	0.412	.740	High
Customer Interaction and Communication Quality (CICQ)	4.362	0.396	.744	High
Technology-Enabled Service Delivery (TESD)	4.379	0.383	.658	High
Operational Logistics (OPS)	4.398	0.392	.728	High
Safety Compliance Practices (COMP)	4.396	0.394	.694	High
Project Management Practices (PMPRACT)	4.373	0.408	.741	High
Service Processes (SERVP)	4.375	0.390	.708	High
Digital Transformation (DIGIT)	4.412	0.389	.698	High
Customer Satisfaction (CUSTSA)	4.358	0.376	.616	High
Customer Trust and Safety Perception (CUSTTRU)	4.387	0.390	.689	High
Customer Loyalty (CUSTLO)	4.414	0.383	.656	High
Consumer Behavior Patterns (CUSTBE)	4.405	0.383	.679	High
Perceived Convenience and Service Speed (SPEED)	4.420	0.399	.700	High

Note. n = 241. Mean and SD summarize respondent-level three-item averages; α = Cronbach's alpha for each three-item scale.

At the item level, agreement was less emphatic for consistency from one order to the next (M = 4.149), the appearance of safe cylinder handling (M = 4.166), ease of contacting the dealership (M = 4.195), perceived use of digital tools to improve service delivery (M = 4.145), LPG availability when needed (M = 4.149), delivery planning and scheduling (M = 4.170), and the perceived influence of experience on purchase frequency (M = 4.133). These consistently favorable assessments describe the participating consumers' ratings rather than audited operational performance, which is consistent with the distinction drawn in the literature between perceived service quality and independently observed operations (Parasuraman et al., 1988; Slack et al., 2022). The comparatively limited internal consistency of Service Delivery Practices and Customer Satisfaction suggests that coefficients involving these scores merit additional caution.

Service Dimensions as Predictors of Operational Domains

Table 4 summarizes the Stage 1 regressions. All five joint models were significant, $F(5, 235) = 57.953$ to 86.043, $p < .001$, and the five service dimensions jointly accounted for 55.2% (Digital Transformation) to 64.7% (Operational Logistics) of the variation in the operational-domain scores. Hence, $H_0 1$ was rejected at the level of the joint models, although retained individual predictors differed by model.

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Table 4. *Stage 1 Model Fit and Retained Service-Dimension Coefficients*

Operational Domain	R^2	F(5, 235)	Service Predictors Retained at q < .05
Operational Logistics	.647	86.043	RSM (β = .184, q = .024); CICQ (β = .381, q < .001); TESD (β = .276, q = .001)
Safety Compliance Practices	.601	70.873	CICQ (β = .395, q < .001); TESD (β = .273, q = .008)
Project Management Practices	.567	61.583	RSM (β = .259, q = .007); CICQ (β = .313, q = .008); TESD (β = .242, q = .024)
Service Processes	.641	83.935	CICQ (β = .232, q = .038); TESD (β = .345, q < .001)
Digital Transformation	.552	57.953	RSM (β = .219, q = .019); TESD (β = .306, q = .001)

Note. n = 241. All joint models p < .001. β = standardized coefficient; q = Benjamini–Hochberg adjusted value across 50 HC3 slope tests. SDP and PIC were entered in every model but were not retained in any Stage 1 model.

Technology-Enabled Service Delivery had a retained positive coefficient for all five operational domains, Customer Interaction and Communication Quality for four, and Risk and Safety Management Implementation for three (Operational Logistics, Project Management Practices, and Digital Transformation). The largest retained standardized coefficients were for communication quality with Safety Compliance Practices (β = .395) and Operational Logistics (β = .381). Neither Service Delivery Practices nor Process Implementation Consistency had a separately retained coefficient once the other service dimensions were included; this distinguishes joint model evidence from individual conditional associations and does not establish that these practices have no value or no association.

The prominence of technology-enabled contact and communication is consistent with customer-journey and electronic service-quality perspectives that emphasize connected touchpoints and the distinction between access and fulfillment (Lemon & Verhoef, 2016; Parasuraman et al., 2005), as well as with relationship-management perspectives on information continuity across contacts (Kumar & Reinartz, 2018). The Project Management Practices score (R^2 = .567) was associated with communication quality, risk and safety implementation, and technology-enabled service, findings that concern consumers' view of visible operational coordination rather than a measured internal project-management system.

Operational Domains as Predictors of Consumer Outcomes

Table 5 summarizes the Stage 2 regressions. All five joint models were significant, F(5, 235) = 56.815 to 78.012, p < .001, with the operational domains jointly accounting for 54.7% (Perceived Convenience and Service Speed) to 62.4% (Customer Loyalty) of the variation in consumer-outcome scores. Hence, H_o2 was rejected at the level of the joint models. Each operational domain was retained for at least two outcomes, although no domain had a retained coefficient for all five.

Table 5. *Stage 2 Model Fit and Retained Operational-Domain Coefficients*

Consumer Outcome	R^2	F(5, 235)	Operational Predictors Retained at q < .05
Customer Satisfaction	.611	73.927	OPS (β = .217, q = .012); PMPRACT (β = .252, q = .010)
Customer Trust and Safety Perception	.617	75.866	OPS (β = .206, q = .018); SERVP (β = .325, q = .001); DIGIT (β = .209, q = .041)
Customer Loyalty	.624	78.012	COMP (β = .248, q = .012); DIGIT (β = .239, q = .019)
Consumer Behavior Patterns	.614	74.752	OPS (β = .204, q = .026); COMP (β = .215, q = .040); PMPRACT (β = .203, q = .029); DIGIT (β = .219, q = .033)
Perceived Convenience and Service Speed	.547	56.815	SERVP (β = .253, q = .024)

Note. n = 241. All joint models p < .001. β and q have the same meanings as in Table 4.

Project Management Practices was retained for Customer Satisfaction (β = .252, q = .010) and Consumer Behavior Patterns (β = .203, q = .029), but not for trust, loyalty, or perceived convenience and speed. Service

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Processes had the largest retained standardized coefficient for Customer Trust and Safety Perception (β = .325, q = .001) and the sole retained coefficient for Perceived Convenience and Service Speed (β = .253, q = .024). Safety Compliance Practices was retained for Customer Loyalty and Consumer Behavior Patterns, but its coefficient for Customer Trust and Safety Perception did not meet q < .05, while Operational Logistics and Digital Transformation were each retained for three outcomes.

The outcome-specific pattern does not support assigning a single operational domain as a universal predictor of consumer outcomes. The association of perceived planning, scheduling, and problem handling with satisfaction is consistent with the expectation-disconfirmation perspective, in which satisfaction reflects consumers' evaluation of service relative to expectations (Oliver, 1980, 2015), and with the view that service convenience concerns the time and effort consumers expend across the encounter (Berry et al., 2002). The multiconstruct pattern also parallels research on essential energy services in which trust and quality were jointly related to satisfaction (Santos Neto et al., 2022), although the settings, measures, and models differ.

Sensitivity of Model Fit to Uniform Response Patterns

As shown in Table 6, excluding the 35 respondents who gave identical ratings across all 55 statements reduced R^2 in every model, from .552–.647 to .364–.492 in Stage 1 and from .547–.624 to .371–.455 in Stage 2. The proportion of score variation accounted for is therefore sensitive to this response pattern. The comparison does not establish whether each primary retained coefficient remains retained in the 206-case subset, and it reinforces the need to evaluate the model with independent operational records and additional consumer samples.

Table 6. *Sensitivity of Model Fit to Uniform Response Patterns*

Stage	Criterion	R^2 (n = 241)	R^2 (n = 206)
1	Operational Logistics	.647	.492
1	Safety Compliance Practices	.601	.430
1	Project Management Practices	.567	.393
1	Service Processes	.641	.473
1	Digital Transformation	.552	.364
2	Customer Satisfaction	.611	.424
2	Customer Trust and Safety Perception	.617	.448
2	Customer Loyalty	.624	.455
2	Consumer Behavior Patterns	.614	.441
2	Perceived Convenience and Service Speed	.547	.371

Note. The 206-case comparison is supplementary and does not change the primary coefficients or sample.

Proposed Consumer-Centered Project Management-Based Model

The findings and reviewed literature informed the proposed Consumer-Centered Project Management-Based Model (Figure 2). Its upper tier retains the five service dimensions, five operational domains, and five consumer outcomes and corresponds to the two sets of regression associations. Its lower tier translates the operational domains into a repeatable service-management cycle—initiate the order, plan the delivery, execute service, monitor and resolve exceptions, and close and review the record—adapting the five process groups of the Project Management Institute (2022) to a routine LPG service transaction, consistent with small-firm research supporting proportionate, tailored practices (Marcelino-Sádaba et al., 2014; Turner et al., 2010).

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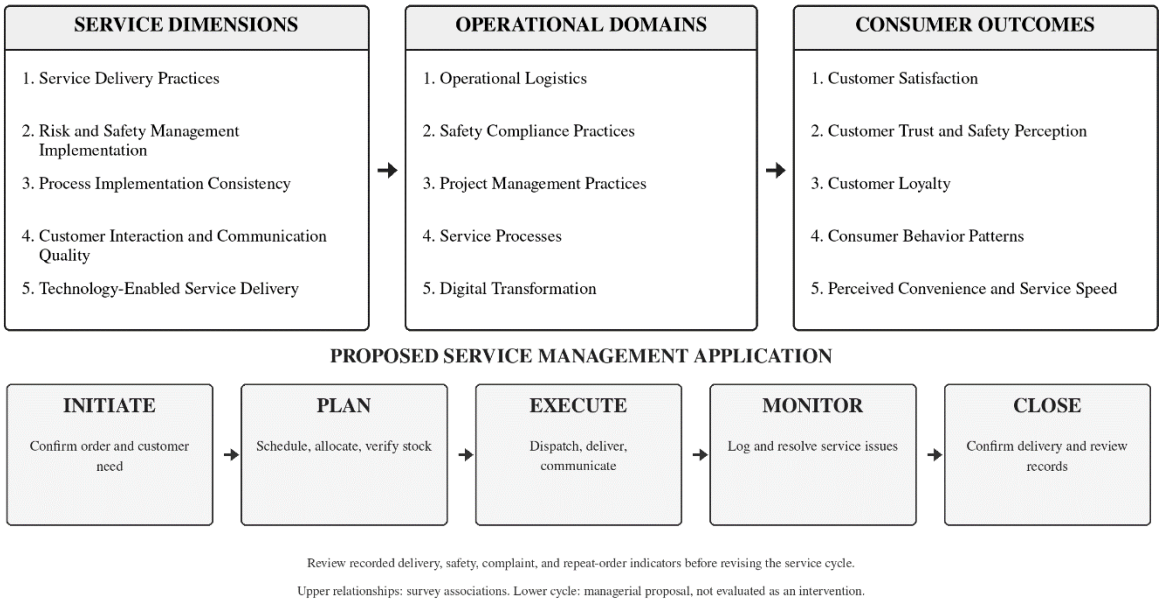


Figure 2. *Proposed Consumer-Centered Project Management-Based Model for Local LPG Dealership Operations*

Table 7 translates the proposed cycle into actions and observable records for piloting at the dealership. The steps are recommendations rather than estimates of treatment effects, and the cycle remains distinct from the consumer-rated Project Management Practices score. Neither the cycle nor its feedback use of records was implemented or evaluated as an intervention in this study.

Table 7. *Proposed Service Cycle, Related Study Constructs, and Records*

Step	Proposed Activity	Related Constructs	Record for Evaluation
Initiate	Confirm cylinder/order details, preferred channel, delivery location, and customer safety questions.	Service Processes; Digital Transformation	Time received; complete order fields; channel used.
Plan	Check stock and cylinder readiness; set dispatch assignment and a communicated delivery window.	Operational Logistics; Project Management Practices; Safety Compliance Practices	Stock check; schedule; promised delivery window.
Execute	Deliver the correct cylinder, provide relevant safety guidance, and update the customer about progress.	Operational Logistics; Safety Compliance Practices; Digital Transformation	Dispatch and arrival timestamps; delivery confirmation; safety checklist.
Monitor and resolve	Log late deliveries, errors, complaints, and safety concerns; assign and document a response.	Project Management Practices; Service Processes	Issue type; response and resolution timestamps; escalation record.
Close and review	Confirm order completion, collect optional feedback, and review recurring problems before changing procedures.	Service Processes; all five consumer outcomes	Completion record; feedback trend; independently recorded repeat orders.

Note. Steps and construct mappings are proposed applications, not tested action-to-outcome effects. Safety procedures must be evaluated against applicable requirements independently of consumer perceptions.

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CONCLUSION

The five consumer-centered service dimensions jointly account for substantial variation in each consumer-rated operational domain at the selected dealership. Technology-Enabled Service Delivery and Customer Interaction and Communication Quality emerge as the most consistent conditional correlates of perceived logistics, safety compliance, project management practices, service processes, and digital support, while Service Delivery Practices and Process Implementation Consistency do not contribute separately retained associations once the other dimensions are considered. The operational domains, in turn, jointly account for substantial variation in each consumer outcome, with differentiated, outcome-specific links: Project Management Practices is associated with satisfaction and behavior patterns, and Service Processes with trust and safety perception and with perceived convenience and service speed.

These findings support the proposed Consumer-Centered Project Management-Based Model as an empirically informed organization of two sets of observed associations within this dealership's consumer sample, together with a practical order-to-closure cycle for dealership management. Because the evidence consists of contemporaneous consumer ratings from one dealership, with concentrated ratings, overlapping item content, two scales of limited internal consistency, and model fit sensitive to uniform response patterns, the study does not establish mediation, causal effects, verified regulatory compliance, or the effectiveness of the proposed cycle. The model is best regarded as a context-specific framework for a documented pilot and further testing.

Recommendation

The focal dealership may pilot a single order record capturing the contact channel, requested product, promised delivery window, actual dispatch and arrival times, completion confirmation, and any problem requiring follow-up, and assign a named person to schedule deliveries and close reported problems, given that the scheduling item had a lower mean (4.170) than the overall-management item (4.502). It may also establish or review documented cylinder and delivery safety checks with clear consumer guidance, and keep digital tools proportional to its capacity—a reliable phone or messaging channel, order confirmation, and traceable delivery updates—while measuring response time, missed messages, and order corrections.

For evaluation, the proposed service cycle should be assessed over a pre-specified implementation period using the same objective indicators before and after introduction, such as on-time deliveries, elapsed delivery time, order corrections, complaint closure time, confirmed safety incidents, and repeat orders, ideally with a comparison route or dealership. Industry associations, regulatory agencies, and local government units may use the framework as a discussion and pilot-design tool but should not treat single-dealership ratings as evidence of sector-wide effectiveness or legal compliance. Future researchers should recruit multiple dealerships and more microenterprise consumers, examine whether the fifteen three-item scales remain distinct, improve the reliability of Service Delivery Practices and Customer Satisfaction, and use operational records, repeated measurements, and formal indirect-effect analysis before describing the operational domains as mediators.

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