

Guidelines for The Development of LPG Business for Households in The Bangkok Metropolitan AreaKritsada Chuenchit¹ Tawee Jamjumrus²
Samneang Maneechai³ and Sarawut Thongsiri⁴

Student of Doctor of Philosophy Program in Development Management, Suan Sunandha Rajabhat University

E:mail : S63584917067@ssru.ac.th¹**Abstract**

Distribution of liquefied petroleum Gas (LPG) to excessive price, Gas packing smuggling and channel to purchase LPG is difficult and there is no choice made consumers to receive gas that is not fully filled and below standards. This research aims to 1) study levels of the business development of LPG gas (household) in Bangkok area, operation management strategy, government policy, services strategy and marketing strategy. 2) study the influence of management strategy, government policy, services strategy, marketing strategy and the business development of LPG gas (household) in Bangkok area; and 3) present the guideline for business development of LPG Gas (Household) in Bangkok Metropolitan This research is a combination of quantitative and qualitative research. Quantitative research has a sample group: household in the Bangkok metropolitan area, 400 samples. The sample size was determined using the criterion of 20 times the observed variable, random sampling, and stratified sampling. Use questionnaires to collect data. Analyze data using a model. Structural equation for qualitative research Data were collected using in-depth interviews. Consisting of involved people such as the Governor and the Office of the Governor and private sector, a total of 15 people, and the data was analyzed using content analysis. The results of the research found that 1) levels of the business development of LPG gas (household) in Bangkok area, operation management strategy, government policy, services strategy and marketing strategy was highest. 2) government policy, services strategy, management strategy and marketing strategy were a direct influence to the business development of LPG gas (household) in Bangkok area, respectively; and 3) present the business development of LPG gas (household) in Bangkok area It has the appearance of an illustrated chart, government policy and services strategy The most total influence is the driving force at the bottom, management strategy in the middle and marketing strategy at the upper level. The research results are useful in bringing to the Ministry of energy to develop rules, regulate, control and corporate governance more efficiently.

Keyword: LPG Business Development/ For Household/ Bangkok**Introduction**

Liquefied petroleum gas (LPG) is currently widely used in many sectors such as the petrochemical sector, the transportation sector, the transportation sector, the The manufacturing sector in industrial and household sectors. Liquefied petroleum gas (LPG) from 2009 to 2020 (Y2009 – Y2020) of the whole country averaged about 6.5 million tons, which is an average household use of about 2 million tons per year. Accounting for 30-35% of the consumption of liquefied petroleum gas (LPG) for the whole year. Estimates of the trend of liquefied petroleum gas (LPG) use in 2021 are expected to be 2,051 thousand tons, accounting for 35% of the estimated The use of liquefied petroleum gas (LPG) in 2021 increased by 0.9% from 2020). Ministry of Energy, 2021). Overview of energy consumption During the month of January – July 2021, it was found that the proportion of domestic liquefied petroleum gas (LPG) use reached 510 thousand tons/month. Household use is the second largest after the petrochemical sector, which accounts for about 173 thousand tons/month, or about 34% of the country's liquefied petroleum gas (LPG) consumption. Procurement of liquefied petroleum gas (LPG) to meet domestic demand. In order to meet the needs of all sectors, refer to the current data. According to the January Energy Supply Overview Report. – July 2021 found that the total supply volume was 515 thousand tons/month. (Office of Energy Policy and Planning, Ministry of Energy, 2017). The trend of the liquefied petroleum gas (LPG) import market will be clearer. During the period of 2022-2023, which is the period of opening the auction for petroleum concessions in the Erawan and Bongkot fields. As a result, the gas production capacity during that period has decreased from the present. The combined production capacity of the two sources is 2.1 billion cubic feet per day, leaving 1.5 billion cubic feet per day. Liquefied petroleum gas (LPG) has also decreased. Imports of liquefied petroleum gas (LPG) to feed the petrochemical, industrial and household sectors increased, except for the transportation sector, which is expected to decrease. Continuing (Economic Base, 2018)

Mr. Supatpong Panmeechao, Deputy Prime Minister and Minister of Energy, has disclosed the information. On September 20, 2021, with Thai Post that from the meeting. The Energy Policy Executive Committee (EPA) on September 20, 2021 said that the meeting had approved to maintain the retail price of LPG at 318 baht per 15 kilogram barrel. It will be extended for another 3 months from October 1, 2021 to December 31, 2021 to alleviate the burden of people's cost of living due to the COVID-19 pandemic. The global market is likely to rise at the end of this year, and the Ministry of Energy has been assigned to closely monitor the LPG price situation (Thai Post, 2021)

The researcher chose the research in the Bangkok area because it is a large community with various types of households such as buildings, houses, condominiums, etc., with various statuses such as good, middle, and poor. Using LPG in cooking (National Statistics Office, 2023)

Many issues arise in this business related to management strategies such as distributor practices of couriers, insurance, and service strategies such as fast delivery. Expansion of service branches, product quality assurance Common problems include overpriced liquefied petroleum gas (LPG) sales. Gas Packing Smuggling Consumers are exposed to gas that is not fully filled. Safety standards for tanks and valves Cylinders in old condition lack safety checks of gas cylinders. Gas delivery staff with poor quality service Lack of knowledge and understanding of the product, difficult and unavailable LPG procurement channels, and waiting time for service from distributors that do not keep up with demand.

Therefore, the researcher is interested in research. Guidelines for the development of LPG business For households in the Bangkok area, the goal is to create suggestions. Guidelines for the development of liquefied petroleum gas (LPG) distribution business for the household sector in the Bangkok area.

Objectives

1. To study the level of LPG business development for households in the Bangkok Metropolitan Area.
2. To study the causal factors of management strategies. Government Policy Service strategies and marketing strategies that influence the development of LPG business for households in the Bangkok metropolitan area.
3. To propose guidelines for the development of LPG business for households in the Bangkok area.

Methodology

This research is a combination of quantitative research and qualitative research. Quantitative research: The sample is the population of LPG users in the household sector in the Bangkok metropolitan area. Based on household population data in the Bangkok metropolitan area, 400 people were sampled using the principle of probability stratified random sampling. The tool was a 5-level estimation questionnaire with 95 questions to check the quality of the tool by finding the IOC value, and it was found that the IOC value of the whole paper was equal to .95 and the confidence value of the whole paper was equal to .954. Qualitative research: The key informants are those who are involved. In the LPG business, which will include: Relevant government executives Private Sector Executives In the LPG business chain, LPG distributors In the Bangkok Metropolitan Area, the group of key informants in the in-depth interview consisted of 15 key informants, the tools were semi-structured interviews with 6 open-ended questions, the IOC value of the questions was between 0.80-1.00.

Results

Research on Guidelines for the Development of LPG Business for Households in the Bangkok Metropolitan Area The research results according to the research objectives are summarized as follows:

The objective of the first research is to study the level of LPG business development for households in the Bangkok Metropolitan Area. Management Strategy Government Policy Service Strategy and Marketing Strategy

Table 1 Importance of Factors

Latent Variable Sum (TOT)	amount	Mean	St. Dev.	Priority	order
Management Strategy	400	4.33	0.39	most	1
Marketing Strategy	400	4.30	0.48	most	2
Government Policy	400	4.29	0.44	most	3
Service Strategy	400	4.27	0.42	most	4

From Table 1, they can be sorted as follows: Management Strategy; The highest average score was high overall ($\bar{X} = 4.33$, S.D. = 0.39), followed by marketing strategy. Overall average score ($\bar{X} = 4.30$, S.D. = 0.48), Government Policy The overall average score is very high ($\bar{X} = 4.29$, S.D. = 0.44), and the overall average score is very high. ($\bar{X} = 4.27$, S.D. = 0.42) respectively.

The second research objective is to study the causal factors of management strategies. Government Policy Service strategies and marketing strategies that influence business development. LPG for households in the Bangkok Metropolitan Area.

The relationship and influence from the joint data analysis were expressed to check the model harmony with the empirical data after the final model adjustment. Effective as shown in Figure 1.

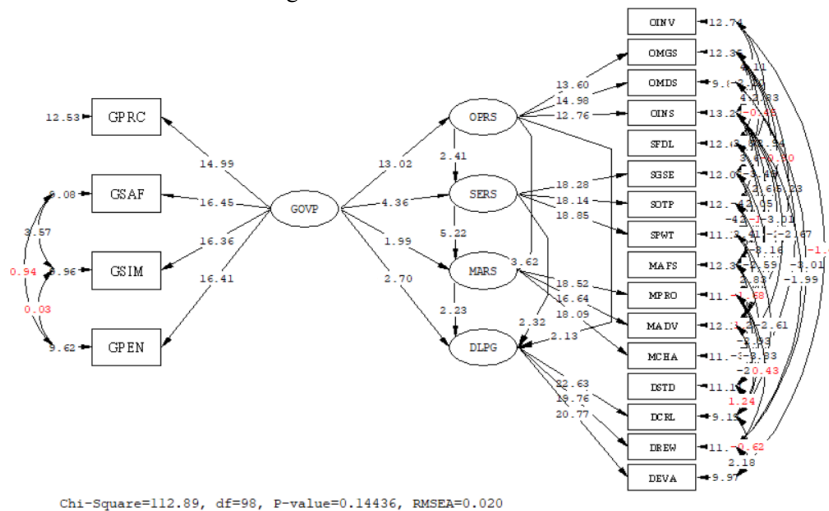


Figure 1.

The results of the hypothesis test are shown in Table 2

Table 2 Analysis of aggregate, direct and indirect relationships of alternative models

Variable by	affair associate	Independent Variable				
		GOVP	OPRS	SERS	MARS	DLPG
OPRS	DE	0.89**	N/A	N/A	N/A	N/A
	IE	N/A	N/A	N/A	N/A	N/A
	TE	0.89**	N/A	N/A	N/A	N/A
SERS	DE	0.61**	0.34*	N/A	N/A	N/A
	IE	0.30*	N/A	N/A	N/A	N/A
	TE	0.91**	0.34*	N/A	N/A	N/A
MARS	DE	0.22*	0.43**	0.75**	N/A	N/A
	IE	0.62**	0.25**	N/A	N/A	N/A
	TE	0.84**	0.68**	0.75**	N/A	N/A
DLPG	DE	0.74**	0.45*	0.69*	0.53*	N/A
	IE	0.24**	0.52**	0.29*	N/A	N/A
	TE	0.98**	0.97**	0.98**	0.53*	N/A

Chi-Square= 112.89, df=98 p-value = 0.144, GFI=0.97, AGFI=0.94, RMR=0.006, RMSEA=0.020, CFI=1.00, CN= 468.01

note: * Represents a statistically significant level of 0.05 ([t]>1.96).

** Refers to the statistical significance at the level of 0.01 ([t] >2.56).

From Table 2, it can be explained that the relationship path shows that the government policy (GOVP) has the most direct correlation with the management strategy (OPRS) of 0.89, followed by the direct impact on the development of LPG business for the household sector (DLPG), the service strategy (SERS) and the marketing strategy (MARS) by 0.74, 0.61 and 0.22 respectively, and the indirect impact on the marketing strategy (MARS), service strategy (SERS) and LPG business development for the household sector (DLPG) by 0.62, 0.30 and 0.24 respectively. Management strategy (OPRS) is directly related to business development. LPG for the household sector (DLPG) was the highest at 0.45, followed by Marketing Strategy (MARS) and Service Strategy (SERS) at 0.43 and 0.34 respectively, and indirectly affected the development of LPG business for the household sector (DLPG) and Marketing Strategy (MARS) at 0.52 and 0.25 respectively.

The service strategy (SERS) was directly related to the marketing strategy (MARS) and the development of the LPG business for the household sector (DLPG) at 0.75 and 0.69, respectively, and indirectly affected the development of the LPG business for the household sector (DLPG) at 0.29. It was found that marketing strategy (MARS) is directly related to business development. LPG for the household sector (DLPG) is 0.53. From the correlation between the internal variable and the external latent variable. Have a positive relationship The pairs with a very high correlation were Marketing Strategy (MARS) and LPG Business Development for the Household Sector (DLPG) with a value of 0.94, followed by Service Strategy (SERS) and Marketing Strategy (MARS) with a value of 0.93, Government Policy (GOVP) and Service Strategy (SERS) with a value of 0.91, Service Strategy (SERS) and LPG Business Development for the Household Sector (DLPG) with a value of 0.90, Management Strategy (OPRS) with Marketing Strategy (MARS) and Management Strategy (OPRS) with Government Policy (GOVP) with a value of 0.89. The value of service strategy (SERS) and management strategy (OPRS) was 0.88, the management strategy (OPRS) and the development of LPG business for households (DLPG) were 0.87, and the government policy (GOVP) and marketing strategy (MARS) were equal to 0.84. The pair with a high level of correlation is with the development of LPG business for households (DLPG) and government policy (GOVP) with a value of 0.72. In addition, it was found that the structural equation model of the management strategy Strategy, service, marketing strategy, and LPG business development for the household sector. The R2 values are 0.78, 0.85, 0.90 and 0.97 respectively. It shows that a hypothetical model of relationship structure can explain the variability of management strategies. Service strategy, marketing strategy, and LPG business development for the household sector were 78, 85, 90 and 97 percent, respectively. The results of the overall image analysis showed that the harmonization index was more consistent with the empirical data, which was in line with the benchmark that showed the consistency of the model and the empirical data with a very good standard.

Table 3 Hypothesis Test Results

Research Hypothesis	Route coefficients	t statistics	result
Hypothesis 1: Government Policy Management Strategy Hospitality Strategy and Marketing Strategy It has a direct influence on the development of LPG business for the household sector.			
1.1 Government Policies It has a direct influence on the development of LPG business for the household sector (GOVP → DLPG).	0.74**	2.70	support
1.2 Management Strategy It has a direct influence on the development of LPG business for households (OPRS → DLPG).	0.45*	2.13	support
1.3 Service Strategy Directly Influences the Development of LPG Business for the Household Sector (SERS → DLPG)	0.69*	2.32	support
1.4 Marketing strategy has a direct influence on LPG Business Development for Households (MARS → DLPG)	0.53*	2.23	support
Hypothesis 2: Government Policy Management strategy and service strategy have a direct influence on marketing strategy.			
2.1 Government Policies Directly influencing marketing strategy (GOVP → MARS)	0.22*	1.99	support
2.2 Management Strategy Directly Influences Marketing Strategy (OPRS → MARS)	0.43**	3.62	support
2.3 Service Strategy Directly Influences Marketing Strategy (SERS → MARS)	0.75**	5.22	support

Table 3 (Continued)

Research Hypothesis	Route coefficients	t statistics	result
Hypothesis 3: Government Policies and Management Strategies Direct influence on service strategy			
3.1 Government Policies Direct influence on service strategy (GOVP → SERS)	0.61**	4.36	support
3.2 Management strategy has a direct influence on Service Strategy (OPRS → SERS)	0.34*	2.41	support
Hypothesis 4: Government Policies It has a direct influence on management strategies.			
4.1 Government Policy Directly influencing management strategy (GOVP → OPRS)	0.89**	13.02	support

Note: ** means p value ≤ 0.01.

* means p value ≤ 0.05

From Table 3, the results of the hypothesis test can be summarized as follows:

Hypothesis 1: Government Policy Management Strategy Hospitality Strategy and Marketing Strategy It has a direct influence on the development of the LPG business for households. has a direct influence on The route coefficient is 0.74 and the t statistics are 2.70, which supports the statistically significant hypothesis at the level of 0.01. increase As a result, the development of the LPG business for the household sector has also increased. Management strategy has a direct influence on The route coefficient is 0.45 and the t statistics are 2.13, which supports the statistically significant hypothesis at the level of 0.05. increase As a result, the development of the LPG business for the household sector has also increased. Hospitality strategy has a direct influence on The route coefficient is 0.69 and the t-statistics value is 2.32, which supports the statistically significant hypothesis at the level of 0.05. There is a correlation in the same direction, that is, when the service strategy increases. As a result, the development of the LPG business for the household sector has also increased. Marketing Strategy has a direct influence on The route coefficient is 0.53 and the t-statistics are 2.23, which supports the statistically significant hypothesis of 0.05. increase As a result, the development of the LPG business for the household sector has also increased.

Hypothesis 2: Government Policy Management strategies and service strategies have a direct influence on marketing strategies. It has a path coefficient of 0.22 and a t-statistic of 1.99, which supports the statistically significant hypothesis of 0.05. As a result, there are more marketing strategies. Management strategy has a direct influence on marketing strategy with a path coefficient of 0.43 and t statistics of 3.62, which supports the statistically significant hypothesis at the level of 0.01. increase As a result, there are more marketing strategies.

The service strategy has a direct influence on the marketing strategy with a path coefficient of 0.75 and a t-statistic of 5.22, which supports the statistically significant hypothesis at the level of 0.01, which can be interpreted as the variables studied are correlated in the same direction. As a result, there are more marketing strategies. **Hypothesis 3: Government Policies and Management Strategies Direct influence on service strategy** It is found that government policies has a direct influence on The route coefficient is 0.61 and the t-statistics is 4.36, which supports the statistically significant hypothesis at the level of 0.01, which can be interpreted as a correlation between the variables studied. In the same direction, that is, when government policies increase As a result, the service strategy will also increase.

Management strategy has a direct influence on The service strategy has a path coefficient of 0.34 and a t-statistic of 2.41, which supports the statistically significant hypothesis at the level of 0.05. increase As a result, the service strategy will also increase.

Hypothesis 4 : Government Policies It has a direct influence on management strategies. It was found that government policies has a direct influence on The path coefficient is 0.89 and the t statistics is 13.02, which supports the statistically significant hypothesis at the level of 0.01, which can be interpreted that the variables studied are correlated in the same direction. As a result, there will be more management strategies.

Research Objective 3: Guidelines for the Development of LPG Business for Households in the Bangkok Metropolitan Area It was found that the guidelines for the development of the LPG business for households in the Bangkok Metropolitan Area. It looks like the chart pictured includes: The management strategy with the most total influence is the driving base at the bottom. Government policies and strategies in the field of services are in the middle. Marketing strategy and LPG business development are also at the top level. However, Chart visualization can be determined by direct influence, and indirect influence and aggregate influence. From all the latent variables that influence and affect each other.

Discussion

Management Strategy Government Policy Service Strategy and Marketing Strategy It has a direct influence on the development of LPG business for the household sector. In the Bangkok area, the details are as follows: Research on LPG Business Development Guidelines for the Household Sector in the Bangkok area. Discussion of findings from the research The researcher presented a discussion of the results divided into two parts: a discussion of the results of hypothesis testing and a structural equation model, and a discussion of the value of research methodology and theoretical concepts.

1. Discuss the results of the equation test of the model structure analysis model Choice of direct influence and indirect influence

1.1 Government policy (GOVP) has the most direct correlation with the management strategy (OPRS) of 0.89, followed by the direct impact on the development of LPG business for the household sector (DLPG), service strategy (SERS) and marketing strategy (MARS) of 0.74, 0.61 and 0.22 respectively, and indirectly affects the marketing strategy (MARS), service strategy (SERS) and LPG business development for the household sector (DLPG) at 0.62, 0.30 and 0.24 respectively.

1.2 Management Strategy (OPRS) was directly related to the development of LPG business for the household sector (DLPG) at 0.45, followed by Marketing Strategy (MARS) and Service Strategy (SERS) at 0.43 and 0.34 respectively, and indirectly affected the development of LPG business for the household sector (DLPG) and Marketing Strategy (MARS) at 0.52 and 0.25 respectively.

1.3 Service Strategy (SERS) is directly related to Marketing Strategy (MARS) and LPG Business Development for Households (DLPG) at 0.75 and 0.69 respectively, and indirectly affects LPG Business Development for Households (DLPG) at 0.29.

1.4 Marketing Strategy (MARS) is directly related to the development of LPG business for the household sector (DLPG) of 0.53

2. For qualitative research The study used in-depth interviews with qualified personnel from relevant government and private agencies. In terms of variable relationships, based on factor loading, as follows:

2.1 Management Strategy (OPRS) consists of: Innovation (OINV), Underwriter Practice (OMGS), Courier Practice (OMDS) and Insurance (OINS) by considering insurance. The next most important component is innovation, the practice of delivery staff, and the practice of distributors, which is in line with the qualitative research results that the innovation in the use of QR Code is in line with the research results of Thepracha. Natawat (2023) conducted research on Guidelines for Capacity Building of Cosmetics Distributors with Herbal Ingredients In conclusion, the results show that the external environment has a total causal influence. To develop the capacity of the most herbal cosmetics distributors. This is followed by marketing strategy. Internal environment and management strategy, respectively. Adding new customer groups, international standards and customer engagement for LPG cylinders will give you the benefit of knowing the details of gas filling. Includes safety checks for gas cylinders. There are innovations used in packaging to ensure that you will receive the full volume of gas in order to get the full amount of gas at the selling price, and can build confidence in safety and have an effect on the decision to buy products for service and can give advice on the product, and the delivery staff should be careful during the transportation of gas cylinders.

2.2 Government Policy (GOVP) consists of: Price control (GPRC), safety control (GSAF), penalty setting (GPEN), and regulatory updates (GRIM) are based on price control. The second is the imposition of penalties. Improvement of regulations and safety controls is in line with qualitative research results that price control in the cost of water, gas, and gas is more efficient. This is obtained from oil production and natural gas fields, which can be reduced more than the cost of packaging and marketing. This creates free competition between each product brand. Safety Control The government should enforce safety standards to actively control LPG sellers and be well monitored by government agencies to improve regulations and impose penalties for those who smuggle LPG out of the country (along the Thai border) without a license. This is in line with the research results of Nataya Kamplanon and Thanin. (2021). Ethical marketing management of industrial business organizations and to propose guidelines to promote ethical marketing resulting in sustainable growth in the industrial sector.

2.3 Service Strategy (SERS) includes: Fast Delivery (SFDL), Service Branch Expansion (SGSE), Order and Payment Channels (SOTP), and Product Quality Assurance (SPWT). The second most important factors are the expansion of service branches, fast delivery, and product quality assurance. Causing customer satisfaction Expanding the service branch to help increase access to more customer groups. It is a standardized quality control process in line with the research results of Vasuthida Nuritmon and Nantaporn Huakaew (2021). The format of the packaging plays an important role in consumers' purchasing decisions. This is an important reason for consumers to consider when choosing to buy a product. Shop Learn more about the product, including the receipt of Accreditation from a trusted authority

2.4 Marketing Strategy (MARS) consists of: After-sales service (MAFS), promotion (MPRO), public relations advertising (MADV), and distribution channel enhancement (MCHA) by considering after-sales service. The second is the increase in distribution channels, sales promotion, and public relations advertising, in line with qualitative research on after-sales service so that customers can check the expiration date of the packaging of the products delivered to customers at any time. Promotion Organizing activities to promote knowledge and understanding Public Relations Advertising is to create awareness in terms of Brand Awareness for consumers and increase distribution channels by increasing distribution channels through kiosks to reach the community. In order more. This is in line with the research results of Pramuon Meeyod (2018), which conducted a study on service quality that affects customer loyalty. The results showed that the quality of service in five areas is 1) customer confidence, 2) trust and reliability, 3) customer care, 4) concreteness of service, 5) speed of customer response, service quality is at a high level, respectively, and customer loyalty in using the service is also at a high level, ranked from descending to lowest: 1) personal factors of gender, age, status, education level, and job position. It does not affect customer loyalty. 2) The quality of customer care services, customer reassurance, and the concreteness of the service influence customer loyalty in using gas leak monitoring and alarm services, respectively, and in line with the research by Jain, S., & Gangal, V. K. (2020), a study on the socio-economic impact of LPG subsidies in India discusses how subsidies help improve living standards by making LPG more affordable and accessible. The results indicate significant economic benefits for low-income households.

2.5 Development of LPG business for the household sector (DLPG) consists of: Standardization (DSTD), Customer Trust Building (DCRL), Award Winning (DREW), and Evaluation (DEVA) based on certification. The next most important organization is building customer trust, evaluation, and awards, in line with qualitative research results. In product shopping, building customer trust, and winning awards. It affects safety, occupational health, and the working environment. In line with the research results of Moazzem, K. G. (2019), the

challenges and opportunities in the energy sector in the field of LPG in Bangladesh were studied. It highlights the potential of LPG to improve energy security and economic development. The findings suggest that strategic investments in LPG infrastructure can greatly benefit the country, and this is in line with research by Amin, S. B., Rahman, S., Amin, S. B., & Rahman, S. (2019). The results suggest that LNG and LPG can play an important role in energy security and growth. Bangladesh's future economy

Suggestion

Academic Suggestions : From the analysis of the data, it was found that the management strategy. Government Policy Hospitality Strategy and Marketing Strategy Influence the development of LPG business for the household sector. In the Bangkok Metropolitan Area, the findings from the research have been taken into the following suggestions:

1.1 Findings and Recommendations 1 Management Strategy (OPRS) includes: Innovation (OINV), Vendor Practice (OMGS), Courier Practice (OMDS), and Insurance (OINS) The findings Insurance has the most weight in the elements, followed by innovation, delivery worker practices, and underwriter practices. **Recommendation:** The development of LPG business for households should take into account the innovation in the use of QR Codes for LPG cylinders. Includes tank safety checks. The government must have the responsibility to issue various policies to protect insurance for cooking gas.

1.2 Findings and Recommendations 2 Public Sector Policies (GOVP) include: Price Control (GPRC), Safety Control (GSAF), Penalty Assignment (GPEN), and Regulation Improvement (GRIM)

Findings: Price control has the most weight, followed by penalties. Regulatory and security controls

Recommendation: The development of LPG business for households should take into account the reduction of filling and marketing costs. To ensure that the safety measures imposed by the government for cooking gas are safe and sufficiently tightened.

1.3 Findings and Recommendations 3 Service Strategy (SERS) includes: Fast Delivery (SFDL), Branch Expansion Service (SGSE), Order and Payment Channels (SOTP), and Product Quality Assurance (SPWT)

Findings: The ordering and payment channel has the most weight, followed by service expansion, fast delivery, and product quality assurance. **Recommendation:** The development of LPG business for the household sector should provide a delivery tracking system after receiving orders from customers, which will lead to customer satisfaction and the expansion of comprehensive service branches will help create awareness and facilitate more access to products.

1.4 Findings and Recommendations 4 Marketing Strategy (MARS) includes: After-sales service (MAFS), promotional (MPRO), public relations advertising (MADV), and distribution channel enhancement (MCHA).

Findings: After-sales service has the most weight, followed by adding distribution channels, promotions, and public relations.

suggestion The development of LPG business for households should take into account the verification of information with QR Code so that customers can check the expiration date of the packaging of the products delivered to customers at any time.

1.5 Findings and Recommendations 5 Development of LPG Business for the Household Sector (DLPG) includes: Standardization (DSTD), Customer Trust Building (DCRL), Award Winning (DREW), and Evaluation (DEVA)

Findings: Standardization The next most important organization is customer trust building, evaluation, and awards.

Recommendation: The development of LPG business for the household sector should establish a standard for controlling the amount of gas to the full size of the package, which will build good trust with customers.

Suggestions for the next research

This research The researcher has suggestions on issues related to the development of LPG business for the household sector. In the Bangkok metropolitan area, to build on this research. The following are as follows:

2.1 There should be research on other variables related to the business development approach. LPG for households in the Bangkok metropolitan area to compare the importance and to achieve greater coverage.

2.2 There should be a research study, evaluation, and follow-up on the LPG business development guidelines for the household sector. in the Bangkok metropolitan area to create sustainable development.

References

- Amin, S. B., Rahman, S., Amin, S. B., & Rahman, S. (2019). LNG and LPG Market Development in Bangladesh: LNG and LPG Can Play an Essential Role as Part of Fuel Mix Strategies in Future Energy Security in Bangladesh. *Energy Resources in Bangladesh: Trends and Contemporary Issues*, 67-71.
- Anusak Chinpaisan. (2021). *Organizational development with quality management system*. Printed at SE-Education Public Company Limited.
- Barney, J. (2018). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120.
- Belch, G. E., & Belch, M. A. (2014). *Advertising and Promotion: An Integrated Marketing Communications Perspective*. McGraw-Hill Education.
- Energy Policy and Planning Office, Ministry of Energy. (2017). Resolution of the National Energy Policy Committee No. 3/2017 (No. 13). Retrieved October 10, 2021, from <http://www.eppo.go.th/index.php/th/eppo-intranet/item/12749-nepc-pravut31-07-60>.
- Energy Policy and Planning Office, Ministry of Energy. (2021). Natural gas CNG/NGV. Bangkok: Ministry of Energy.
- Gronroos, C. Relationship Approach to Marketing in Service Contexts : The Marketing and Organizational Behavior Interface. (1990). *Journal of Business Research* 20(1), pp. 3- 17.
- Heskett J.L., Jones T. O., Loveman G. W., Sasser W. E. Jr., Schelesinger, L. A. (1994). Putting the service-profit chain to work. *Harvard Business Review*, 72(2), pp 164-174.
- Jain, S., & Gangal, V. K. (2020). Impact Of LPG Subsidy On Socio-Economic Upliftment., A Study In Uttar Pradesh.
- Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, 50(4), 370-396.
- Michael E. Porter (2021). *Competitive Strategy : Techniques for Analyzing Industries and Competitors*. Free Press.
- Moazzem, K. G. (2019). The power and energy sector of Bangladesh: Challenges of moving beyond the transition stage.
- Montien Charoenwong. (2021). Supporting the use of cooking gas in households for sustainable health and environment. *Journal of Sustainable Development*, 15(1), 134-145.
- National Statistical Office. (2023). Summary of important results of the survey of the economic and social conditions of households 2023. National Statistical Office, Ministry of Digital Economy and Society.
- Natthaya Kampalanon and Thanin Sinlapacharu. (2021). Promoting ethical marketing for sustainable growth in the industrial business sector. *Journal of Social Science Doctoral Studies*, 12(1), 73-86.
- Nguyen, E. (2021). Logistics Efficiency and Service Expansion in the LPG Industry. *Australian Journal of Energy Management.*, 34(2), 211-225.
- Office of Management Strategy (2021). Statistics of Bangkok 2021. Retrieved October 10, 2021 from <https://webportal.bangkok.go.th/pipd/page/sub/21303/Statistics-of-Bangkok-2021>.
- Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1988). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49, 4.
- Parinnya Nilsuk. (2019). Management strategy: creating value and sustainability in Thai businesses. *Journal of Business Administration*, 41(2), 33-50.
- Pramon Meeyod. (2018). Service quality affecting customer loyalty in using gas leak detection, measuring and warning tools in the automotive industry: A case study of M2P Technology Co., Ltd. (Independent study for Master's degree, Rajamangala University of Technology Thanyaburi).
- Pred, A. (1967). *Behavior and Location: Foundations for a Geographic and Dynamic Location Theory*. Part I. Lund Studies in Geography.
- Schmenner, Roger W. *Service operations management*. (1995). Englewood Cliffs, NJ Prentice Hall.
- Somchai Wongwises. (2020). Organizational Management in the Digital Age: Strategies and Practices. *Journal of Innovation Management*, 3(1), 55-70.
- Tarika Sarathongkham. (2022). Product development model of community enterprise groups that meets customer needs in the future. *Western University Research Journal of Humanities and Social Sciences*, 8(1).
- Thai Post. (2021). NGV freezes LPG prices for another 3 months. Dated 20/09/2021. Retrieved October 09, 2021, from <https://www.thaipost.net/main/detail/117308>.
- Thansettakij (2018). LPG import competition is fierce! New entrants are ready to seize the market. Dated 5/05/2018. Retrieved October 09, 2021, from <https://www.thansettakij.com/business/279017>.
- Thepparat Pimolsathian, Ph.D., Service innovation in the digital economy. A case study of physical resource management business in Thailand, *Journal of Politics and Governance*, Year 7, Issue 1, January - April 2017 <http://copag.msu.ac.th/journal/filesjournal/7-1/29052017111723.pdf>.
- Wasuthida Nuritorn and Nantaporn Huaykaew (2021). The influence of product characteristics on the decision to purchase dietary supplements of the elderly: An empirical test of the moderating variable of perceived value. *Northestern University Academic and Research Journal*, 11(1).
- Worarin Rattanawong. (2021). Cooking gas price regulation: challenges and guidelines for improvement. *Energy Economics Journal*, 7(3), 102-115.