



## Evaluation Market Penetration of Infrastructure as A Service (IaaS) to Formulate Marketing Strategy: Study Case Lumos Tech Indonesia

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**ABSTRACT:** The forecasted revenue growth of cloud computing has become a huge opportunity for IT infrastructure providers, especially for Infrastructure as a Services (IaaS) which have the biggest portion of the cloud computing business. International Data Corporation claims that the estimate revenue for IaaS in 2026 will reach USD 65.5 billion with CAGR 22.8%. Lumos Tech is an alias name that is used to protect the true identity of the firm that is being studied. As a global technology company who provides IT Infrastructure including IaaS offer, ideally Lumos Tech Indonesia should be able to capture this opportunity. However, the company is having a slow penetration rate which approximate to 0.2% for the IaaS offer.

It is essential for the company to find factors that hinder the market penetration rate and design a marketing strategy to improve the business performance. The study adopts a mixed methodology where quantitative method is adopted to perform market assessment and the qualitative method focus on assessing the current condition to define the internal factors that hamper market penetration for IaaS offer. The data collection is categorized into two; the external data collection covers the data gathering from outside Lumos Tech through questionnaire, reports and journals and the internal data collection is done by doing an in-depth semi structure interview with the owner of the problem. Furthermore, the analysis is performed by utilizing PESTEL, Porter's 5 Forces, quantitative descriptive and coding process. The objective of this study is to formulate marketing strategy for Lumos Tech's IaaS offer by leveraging a modified Business to Business (B2B) marketing mix.

**KEYWORDS:** B2B Marketing Mix, Infrastructure as a Services, Market Penetration, Marketing Strategy.

### INTRODUCTION

Indonesia, the most prominent economic power in Southeast Asia, aims to become the world's tenth largest economy by 2030. In order to achieve this target, the Indonesian Government launched a program called Making Indonesia 4.0 to accelerate the implementation of Industry 4.0. Information Technology (IT) industry serves as the central facilitators and bears a significant obligation to uphold the ambition. This industry encompasses various fields like networking, telecommunication, computing hardware, software, system integrators, developers, and more. One of the first steps for businesses to embrace Industry 4.0 is to create a strong IT infrastructure and efficiently oversee its operations. This will enable businesses to enhance efficiency by increasing productivity, reducing cost and eliminating business risks.

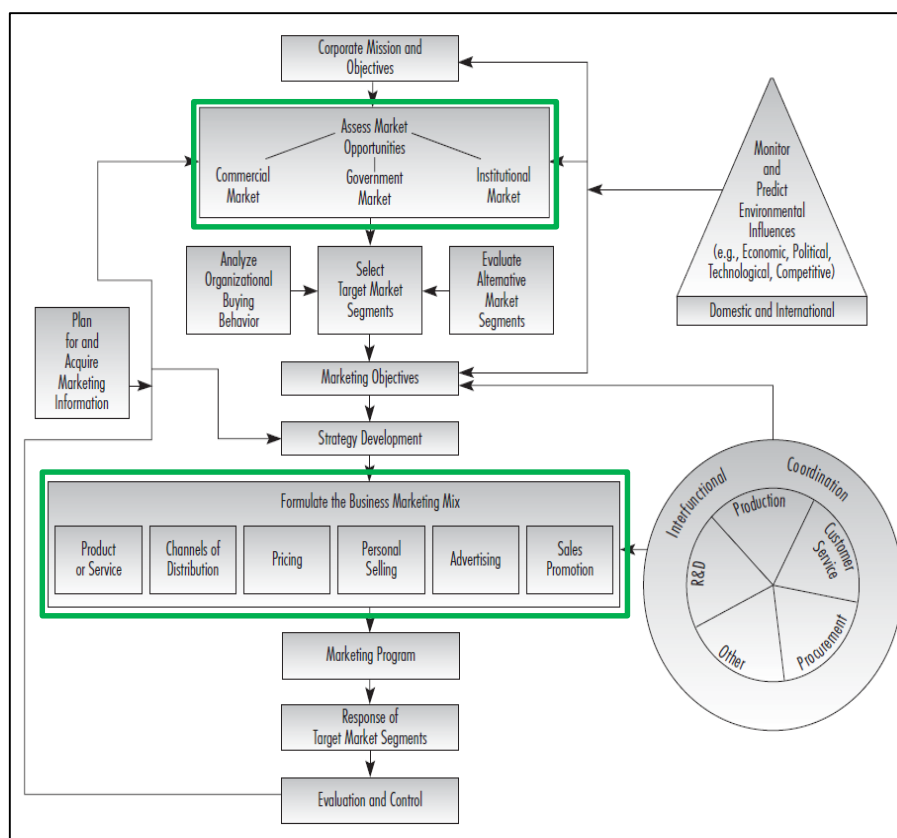
International Data Corporation (IDC) forecasted the revenue growth of cloud computing for Asia Pacific region will reach USD 65.5 billion with a compound annual growth rate (CAGR) of 22.8% by 2026. Meanwhile, Indonesia is projected to have a yearly growth rate in the range of 20% to 30%. Infrastructure as a Services (IaaS) has the largest share among the other cloud computing type, this indicates that IaaS has a strong business opportunity since the demand is rising and it should be pursued by the IT infrastructure firm including Lumos Tech Indonesia.

Lumos Tech is an established world-wide company that operates in IT Infrastructure. Indonesian Lumos Tech entity is divided into three legal entities covering PT. Lumos Tech Indonesia, PT. Lumos Tech Services and PT. Lumos Finance. The IaaS offer of Lumos tech is quite unique as it requires the customer to install the hardware on their data center. However, customers may still take advantage of the pay-per-use model on a monthly basis with a predetermined minimum capacity commitment. Despite the distinctive offer and highly potential business opportunity, unfortunately the business performance of IaaS offer is not performing well as the market penetration rate is only 0.2%. This study aims to determine the factors that hinder the market penetration of the IaaS offer and design a marketing strategy that can help the company to expedite the market penetration in order to improve the business performance.

**LITERATURE REVIEW**

The IT infrastructure of a firm comprises resources such as hardware, software, and networking devices that facilitate the corporation's business activities (Choubey & Singhal, 2012). The cloud is typically described as the combination of hardware, networks, storage and services that facilitate the provision of computing as a service (Hurwitz et al., 2010). Cloud Computing has five special attributes, including on-demand service, broad network asset, resource pooling, rapid elasticity, and measured (Marinescu, 2018). IaaS is one of cloud delivery model that can be adopted where it enables customer to acquire hardware computing resources such as server and storage which may eliminate the need to maintain the customer's servers and data center and allow customer to have a flexible IT infrastructure solution.

The formulation of business marketing strategy needs to be aligned with the corporate mission and objectives. When a company defines its mission, it must identify its business purpose, analyze environmental trends, and evaluate its strengths and weaknesses (Hutt & Speh, 2010). Figure 1 shows the comprehensive framework for Business to Business (B2B) marketing strategy and the green-highlighted box indicates the scope of this study. According to this, there are three main market opportunities for B2B transactions including the commercial sector, which comprises profit-oriented businesses, the government sector, and the institutional sector, which contains educational institutions such as schools, colleges, and hospitals. The Marketing mix for the B2B model has six essential components: product and services, distribution channel, price, personal selling, advertising, and sales promotion.



**Figure 1. B2B Marketing Strategy Framework (Hutt & Speh, 2010)**

Igor Ansoff invented the Ansoff Matrix with the objective of identifying various types of strategies for business expansion. In order to identify the risk level, the matrix evaluates two dimensions that cover product development and market. The four strategies that are included in this matrix are: (1) Market penetration strategy involves the decision of a corporation to sell its current products in the existing market, (2) Market development involves selling current items to new markets which opens up new segments, (3) Product development strategy is used when a company serves an existing market by creating a new product, (4) Diversification strategy approach involves entering new markets with new products.



## METHODOLOGY

This study adopts the convergent designed of mixed method research method, where the researcher intends to compare or combine the qualitative and quantitative data analysis (Creswell & Plano Clark, 2018). The qualitative portion is designed to identify current situation, factors that caused the slow market penetration of the IaaS offer. The methodology that is used to collect the data is in-depth semi structured interview. Furthermore, the data is being analyzed using a sequential coding process to identify the dimensions or variables that strongly related to the business issue.

On another hand, the purpose of the quantitative portion in this study is to conduct a market assessment for three specific sectors: commercial, government and institutions. The market assessment is performed by utilizing a questionnaire that is designed for individuals who work in IT-related departments and those in C-level positions inside the organization. The minimum sample for the questionnaire is 90 respondents. A pilot testing for the questionnaire is performed for 10 days, to identify the validity and reliability. A quantitative descriptive analysis is performed to gather insight from each of metrics that is define on the questionnaire design stages. In addition, the secondary data is leveraged in external analysis process through PESTEL and Porter's 5 Forces. The final stage of the study covers the formulation of marketing strategy through a modified B2B marketing mix.

## RESULT AND DISCUSSION

### 1. PESTEL Analysis

Indonesia possesses stable and vibrant democracy, which classified as "medium" category, this signifies by the score of democracy index at 78.12 out of 100 points (Ministry of Investment, 2024). Currently, the Government of Indonesia demonstrates a strong commitment in embracing new technology adoption. This is quite obvious through several initiatives such as Making Indonesia 4.0 program, creation of Indonesia Digital Roadmap, and legalization of personal data privacy constitution. Nevertheless, it is essential for business to be prepared as the new presidential regime is coming soon. Overall, in terms of political factors IaaS has a quite favorable business opportunity.

One of the three pillars that the Indonesia Digital Road Map focuses on is the digital economy. It is essential for business to leverage the downstream of IT to achieve digital economy which led to the emerging of the utilization of cloud computing technology (Abygail, 2022). According to one of PWC report in 2021, the Indonesian economy is expected to benefit from a productivity advantage of US\$10.7 billion by implementing cloud technology between 2021 and 2025. Infrastructure as a Service enables micro and small organizations to get greater economic benefits. Therefore, economic condition and IaaS business are complementary to each other's in a positive way.

In terms of sociocultural factors, it is essential for business to continuously monitor this, as it is not only changing but also vary between groups. In relation to the IT Infrastructure, the tradition of existing process where huge firms are preferred to make the purchase through Capital Expenses has become a challenge for the IaaS providers. Besides, the adoption of IaaS could trigger a new social concern such as data privacy. On the other hand, the IaaS may enable organizations to be more productive which may lead to business growth and job opportunities.

Technological aspects in the current corporate climate are essential, characterized by the extensive use of IT tools. Key factors include research and development effort, automation, technology incentives, and the rate of technological progress. As technology player, IaaS providers should carefully assess the challenges associated with implementing their technology in Indonesia, as a developing nation. Choosing the appropriate target market will ease the way they get into the market. In addition, they also need to quickly and flexibly adapt to market changes by providing secure, automated, and connected solutions as technological awareness is spreading quickly.

In terms of Ecological, there are raising awareness of sustainable growth through economic, environmental, and social program. Businesses are expected to adopt cloud computing solutions in order to decrease energy consumption and carbon emissions, in line with the Sustainable Development Goals (Abygail, 2022). Legal aspects cover several matters including consumer rights, antitrust and safety standards. The potential risk of unauthorize access and data manipulation might be happened when utilizing cloud provider's data center. Hence, it is important to properly manage customer and employee data in the cloud by following best practices, including strong authentication and safe data movement.

Overall, Lumos Tech has a good opportunity to grow the IaaS offer based on some supporting facts such as a stable political condition, the implementation of personal data protection law and Government plan towards the acceleration of technology

adoption through build several national data centers. In addition, for economic and socio-cultural factors, the IaaS business is complementary with each factors positively. This shows that the PESTEL analysis result have a positive tendency towards the IaaS business.

**2. Porter’s 5 Forces**

The threat of substitute products is considered low because the potential IaaS growth in Asia Pacific is very promising, even though there are several substitute products that are available on the market. It has low risk for the business since the demand will be increased. This condition is also similar with the bargaining power of supplier, where it possess lower risk. As a global firm, Lumos Tech has a strong supplier networking. In contrast, the bargaining power of buyer indicates the significant level of risk as the customers are having a high level of price conscious which weaken the firm’s position. The other two factors have a moderate level of competitiveness. Overall, the IaaS offer of Lumos Tech has a good business opportunity since the market is still attractive. The summary of Porter’s five forces is depicted in Figure 2.

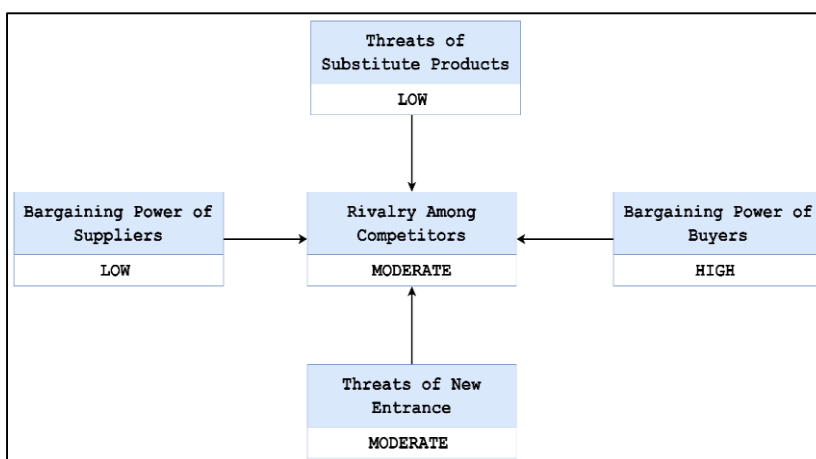


Figure 2. Summary Porter’s 5 Forces

**3. Quantitative Data Analysis**

Qualitative data analysis is performed to find the most attractive market that has highest likelihood to adopt Lumos Tech’s IaaS offer. A total of 102 sample data were obtained from respondents, this covers minimum number of samples that is required which is 90 (30 from each market). The final questionnaire passed the validity and reliability test with a Cronbach Alpha coefficient of 0.925. This is consistent with the outcome of the pilot testing, consequently it is reasonable to conclude that the questionnaire is valid and reliable. Majority of the respondents, 37.3% is coming from Commercial market which include manufacturing, banking, telecommunication, wholesale and small medium enterprises. Institution market covers schools, universities and hospitals. The Government market includes state owned enterprises (SOEs) and government institutions such as ministry. The summary of respondent profile is available on Figure 3.

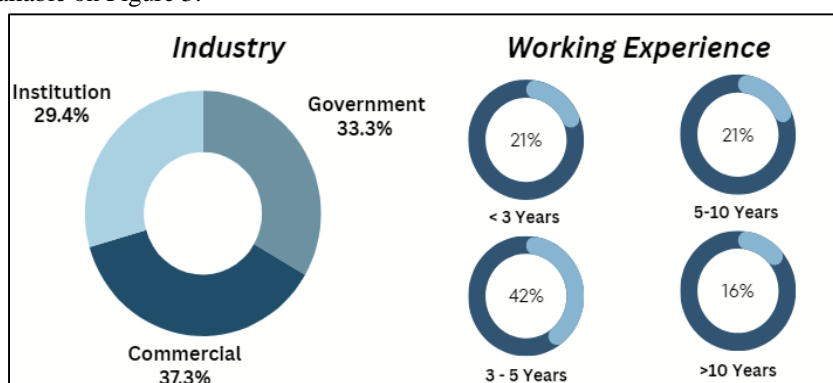


Figure 3. Respondent Profile



Furthermore, a rank-based approach, where 1 indicates the highest score and 3 represent the lowest score is used to recap the result of market assessment that is shown in Table 1. Based on market assessment, the most suitable market for the IaaS offer is Institution Market as it received the highest score. On the other hand Government Market also poses huge potential as Government ambition towards digital acceleration is clearly visible. Currently most of Lumos Tech's IaaS customer is coming from Commercial Market, in fact, this market highly contributes to the overall company performance. Therefore, all markets pose a good opportunity, but prioritizing institutional market could help the company to accelerate the market penetration.

**Table 1. Summary of Market Assessment**

<i>Metrics</i>	<i>Commercial</i>	<i>Government</i>	<i>Institution</i>
Data Center Ownership	3	1	2
Cloud Adoption	1	2	3
Awareness	3	2	1
Interest	3	1	2
Desire	3	2	1
Act	3	2	1

In general, Lumos Tech has a moderate brand reputation in Institution and Government market since the tendency rate is below 70%, while in the Commercial market it show lesser rate at 47%. A famous global company name cannot guarantee the high penetration rate especially when the company is dealing with different market geographically. Having a solid brand reputation in local market might accelerate the market penetration of the IaaS offer. A thorough brand audit process can be done for Indonesian market in order to determine the company's position on the customer-based brand equity matrix. A strong brand is one of four important factors that need to be considered by B2B market (Hutt & Speh, 2010), and it could enhance market penetration of Lumos Tech's IaaS offer. In terms of brands, all market considered that reputation of a brand is having an impact towards the company's purchase decision. Commercial market has the most significant positive tendency towards the IaaS offering, align with the IaaS adoption rate where this market is more mature as they consider technology as an important drivers to grow the business. In terms of latest technology adoption and comprehensive product portfolio, all markets considered that both factors are favourable to their needs. Overall, the markets show a similar trend in terms of product and services and these markets consider that a comprehensive product portfolio positively impact the company's purchase decision.

Lumos Tech has a modest level of awareness in terms of its Channel of Distribution since there is no significant tendency towards the statement where lumos tech has a strong presence in the market. In order to capture the potential growth from the IaaS market, a focused channel of distribution shall be adopted. Selecting an exclusive distributor for IaaS offer could be an answer of the query. Pricing considered as one of critical factors in all market especially in Institutional market. However, there is no significant pricing strategy acknowledged by these markets as they perceived that Lumos Tech pricing is moderately competitive. The interest in distinctive IT Infrastructure might become an impactful driver on Institutional and Government market. In terms of annual IT development budget companies from Institutional market such as hospital and universities have a noticeable confidence level. These three markets respond positively towards promotion and discount, where Commercial market surpass the number of another market. Lumos Tech shall create a program related to promotion and discount to attract potential customers in all markets. Direct marketing and recurrent events contribute toward relationship management metrics that might accelerate IaaS market adoption. In order to expedite the market penetration of the IaaS offer, Lumos Tech can implement a targeted social relationship management and financial relationship management strategy, as relationship management has a positive impact on customer purchase decisions.

#### 4. Qualitative Data Analysis

The data is collected from three informants who are closely related to the business issue through semi-structured in-depth interview. The internal analysis covers data analysis from the interview process, it is performed through three steps covering open coding, axial coding and selective coding. As a result, there are 27 tentative dimensions that are derived to 4 dimensions which consist of complex



business process, organizational challenges, marketing strategy and relationship management. These are four factors hinder the market penetration of the IaaS offer. In terms of product-market matrix, currently the company adopted market penetration strategy as it serves existing market with existing products as depicted on Figure 3.

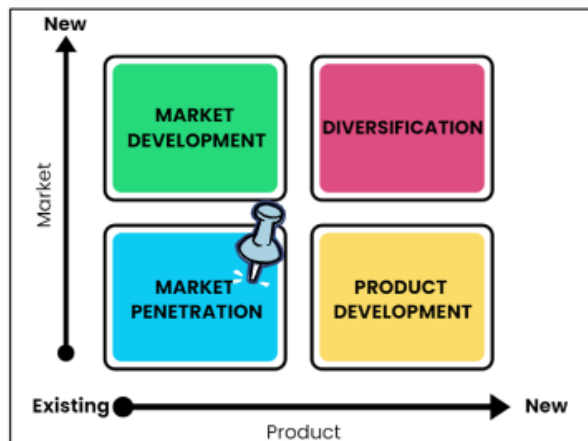


Figure 3. Ansoff Matrix for Current Condition

**BUSINESS SOLUTION**

In order to accelerate and grow the IaaS offer, a marketing strategy is formulated using a modified B2B marketing mix which consist of product & services, channel of distribution, pricing, sales promotion and relationship management. Detail comparison and justification for the modified B2B marketing mix is explained on Table 2.

Table 2. Modified B2B Marketing Mix

<i>B2B Marketing Mix</i>	<i>Modified B2B Marketing Mix</i>	<i>Justification</i>
Product & Services	Product & Services	Unmodified
Channel of Distribution	Channel of Distribution	Unmodified
Pricing	Pricing	Unmodified
Personal Selling	Relationship Management	Modified to a smaller scope, as per theory relationship management is part of personal selling. As per internal and external analysis result relationship management play an important role to accelerate market penetration for the IaaS offer.
Advertising & Sales Promotion	Promotion	Advertising is excluded as it is driven by head quarter office and it is managed globally. Hence, it categorized as a component that is beyond the scope of consideration.

There are seven strategies that are designed utilizing the modified framework and it is explained below:

**1. Product & Services**

➤ **Leverage global brand reputation, security of the offer and data sovereignty to strengthen local brand reputation.**

Currently, customers are starting to acknowledge the hidden cost from Public Cloud offer where the providers will charge additional cost if the customer want to retrieve their data. By providing distinctive IaaS offer, Lumos Tech Indonesia could gain advantages, as there will not be additional cost for the same query if customer adopting Lumos Tech’s IaaS offer. By strengthening the position on the market as a trusted, reliable and secure IaaS provided, it will strengthen the firm’s reputation and increase the opportunity for customers to adopt the IaaS offer.



➤ **Re-launch the pre-defined package which is customized to specific market segment and customer’s historical purchase behavior.**

Previously the company has implemented this initiative by creating a bundle package for the IaaS offer but it is not working well due to improper sizing and less cross functional synergy within the company. With a focused market approach, Lumos Tech is expected to be more aggressive in proposing the offer as the pricing and sizing information has been defined. This can avoid the long lead time of sizing and pricing process for the customize IaaS offer. In addition, with the integrated implementation plan of the proposed marketing strategy it will enhance the cross functional synergy.

**2. Channel of Distribution**

➤ **Selecting exclusive distributor to focus on selling IaaS offer.**

An exclusive distributor who focusses to sell the IaaS offer will enhance the opportunity to expedite the market penetration since it will help the company to monitor and control the IaaS business more easily. This exclusive distributor will carry specific number that need to be delivered to maintain its exclusive rights. In addition, this also will help Lumos Tech Indonesia in terms of standard terms and conditions that mostly become an issue during closing the direct deals and the restriction in some marketing activities such as advertising.

➤ **Improvement on route to market process by excluding Lumos Finance.**

Excluding financial entity on the route to market process in order to reduce complexity of the IaaS offer is feasible to be implemented as currently the temporary practice has been performed where Lumos Finance is not involved in the IaaS deal. Beside that, enabling internal sales between Lumos Tech and Lumos Tech Services will enhance the efficiency of the route to market process. Detail improvement on route to market process is depicted on Figure 4.

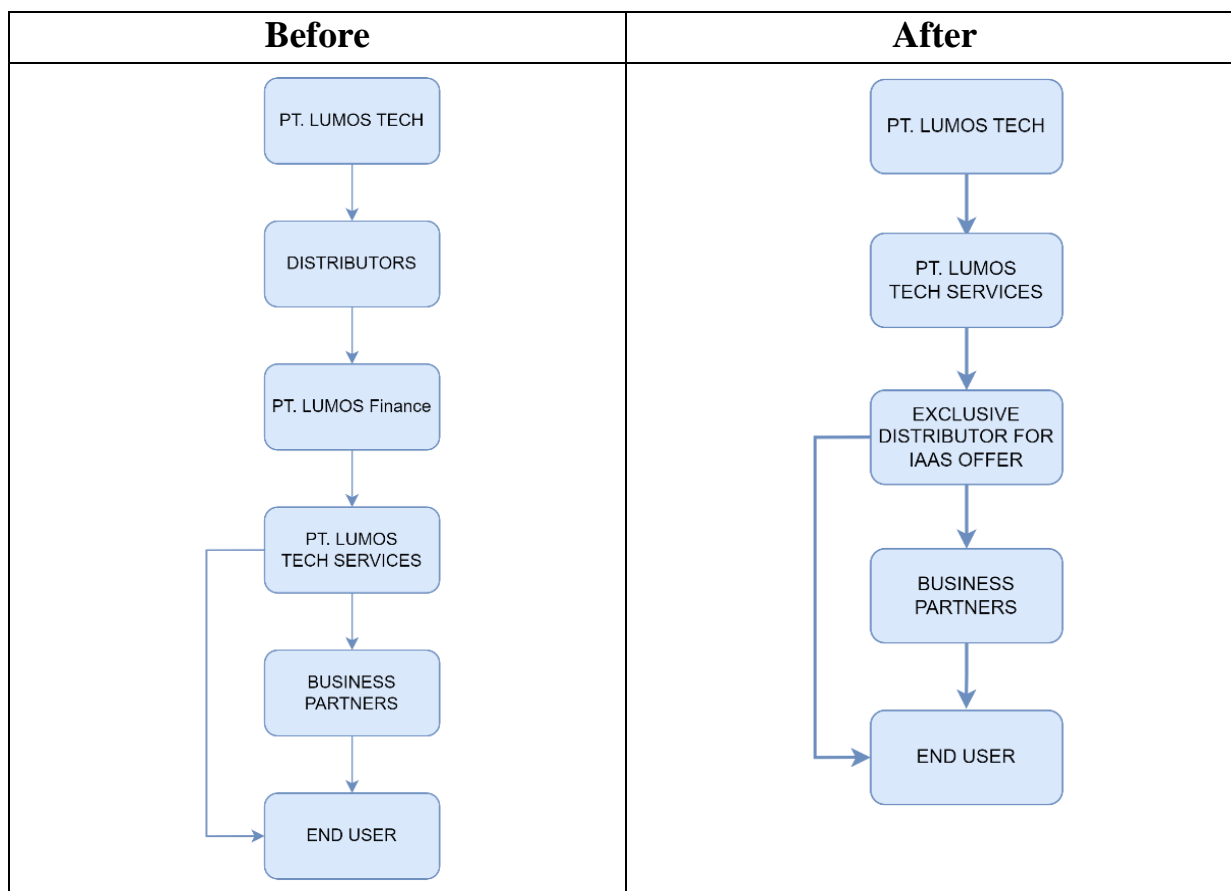


Figure 4. Improvement on Route to Market Process

**3. Pricing**

- **Implement value-based pricing strategy through focusing on the long-term benefits and emphasizing on distinctive IT infrastructure solution by adopting IaaS offer.**

This strategy can be implemented when company have a specific target customer, this can be performed through creating a list of propensity customer towards the IaaS offer. By selecting several top accounts based on the propensity list, Lumos Tech can implement the strategy by having an annual business plan for each account where sales, pre-sales and business development from the hardware and services entity are taken part.

**4. Relationship Management**

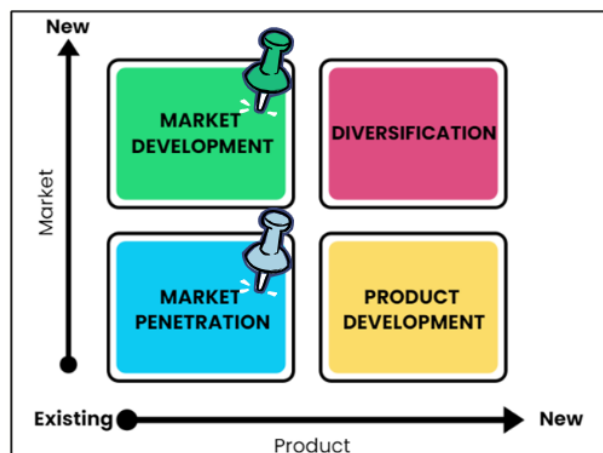
- **Enhance social relationship management**

Conducting enablement session of the IaaS offer to internal and external stakeholders in order to clarify and fully understand the offer. This will help the sales team to cascade the correct information to the customer. It is also important to maintain consistency by emphasizing security and data sovereignty on every social relationship management event that is conducted by the firm.

- **Create a program to retain existing IaaS consumer**

Organizing a quarterly event can help the company to maintain relationship with the existing IaaS consumers. Fostering relationship with existing consumers become essential for Lumos Tech since there is a possibility for consumer to increase the capacity or sizing of existing IaaS environment. Thus, it is a low hanging fruit opportunity for the company. On top of that this program could also become a media to gather feedback and maintain customer’s satisfaction.

Beside implementing above proposed marketing strategy, in terms of product-market strategy it is important for Lumos Tech to start considering dual strategy approach through market penetration and market development. This could help the firm to gain more market share as the demand of IaaS is expected to rise. The market development strategy can be performed through acquiring new customer in Institution and Government market.



**Figure 5. Proposed Ansoff Matrix**

**CONCLUSION**

To answer the first research question related to factors that caused the slow penetration of Lumos Tech’s IaaS offer, it involves four factors. It covers complex business process, organizational challenges, ineffective marketing strategy and lack of consumers relationship management. Meanwhile, the second objective of the study is fulfilled through formulation of marketing strategy to enhance the market penetration rate of Lumos Tech’s IaaS offer including (1) Leverage global brand, data security and data sovereignty as the competitive advantages, (2) Re-launch pre-defined package, (3) Selecting exclusive distributor for IaaS offer, (4) Improvement on route to market process, (5) Implement value-based pricing, (6) Refocusing social relationship management and (7) Create a customer retention program.





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