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ASSESSING THE IOT BUSINESS MODEL CASE STUDY: PT. XYZ

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ABSTRACT

The purpose of writing is to analyze the business model of the IoT technology service provider at the XYZ company. XYZ company is diversifying its business in the IoT technology business. There is a problem with XYZ company's ability to run a new business outside the current business environment. For this reason, the data was taken from observations and interviews with company employees. Five Force's and SWOT Analysis is used to analyze the company's business strength, and the analysis of the financial performance of the business is used Return of Investment (ROI), Payback Period, and Net Present Value (NPV). The results of business analysis by designing a new business model from three scenarios: the optimistic scenario with an ROI of 22.2%, moderate 10.7%, and pessimistic 8.7%. The NPV shows a positive number for business projections for the next five years. It can be concluded that the IoT service provider business model designed by XYZ company can positively contribute to the company's financial performance and sustainability.

Keywords: *IoT, Business Model Canvas, Lean Canvas, Porter's 5 Forces, SWOT*

1. INTRODUCTION

The use of technology in today's era cannot avoid supporting the activities of human needs. The human civilization that is increasingly complex makes technology develop very rapidly. Technology enters all lines of life, from the military to household needs, however. All sides of life feel this technological progress. Technology has become an essential component of social and economic development in several developing countries. The technology involves knowledge, tools, and documents [1]

Along with the development of the era, the company continues to transform to survive in the industrial world. In recent years, Industry 4.0 (I4.0) has developed where the industry is more efficient, faster, more flexible, and resilient in complex supply chains [2]. On the other hand, the increasing complexity, dependence, and interconnection between components, dynamic systems, advanced components such as cyber-physical systems sensors are challenges for more reliable systems. Traditional methods must update, and new frameworks for reliability, risk, safety, and security must be developed [2].

Every industry has a unique and dynamic Business Model (BM). The business modeling process is a managerial domain where the scientific method begins with a hypothesis, then tested in action and revised when necessary [4]. BM is a common thing in the industrial world where it has many challenges of business uncertainty in the industry. There are six stress factors to identify tension in I4.0, namely management issue, an economic issue, technological readiness, lack of trained personnel, unclear standards and regulations, and power of other stakeholders [3]. The challenge from BM is to do a careful assessment so that the business becomes sustainable in the long term.

PT. XYZ is a leading oil & gas services company in Indonesia. In achieving the company's target to be adaptive, the company always strives to develop new businesses, both in the scope of oil & gas or non-oil & gas services. The company's capacity is recorded to have a total of 1354 employees in 2018. PT. XYZ is determined to take on a role in Industry 4.0. New business development in IoT is a new thing to achieve.

Along the way, there are many organizational obstacles. The company's management structure does not allow to accelerate decision-making. Other barriers, such as the concept of a very rigid supply chain and seem slow in procuring goods. On the other hand, raw material suppliers are also very volatile, making it difficult to predict the production time of IoT devices. In addition, competitors also move quickly to penetrate the market. Realized because it has some shortcomings in the current business model, PT. XYZ plans to assign an assignment to a subsidiary to run an IoT technology service provider business. With the explanation

above, researchers are interested in studying PT.XYZ's IoT business model. By assessing the current business model, business improvements can be made by existing deficiencies and maintaining what is already good. These issues and discussions have never been studied and have never been published before.

This paper is divided into five parts. In the introductory section, the background of this research is explained. In the literature study, theories are collected and reviewed to underlie an analysis carried out. The third part, the research methodology, which is passed through several stages, is described. After that, the results of the study are described, along with some of the findings. In the last section, conclusions from this study are given to make it easier for readers to understand the resulting output.

2. STUDY LITERATURE

2.1 Company XYZ

PT. XYZ is an energy services company that focuses on water and gas. One of the products developed is smart metering which is used to measure water and gas. The products they have designed have now been piloted to customers as a product validation process. In this product validation stage, their product is carried out as Proof of Concept (POC). The product developed is an online reporting of gas and water usage.

2.2 Internet of Things (IoT)

IoT is a new concept in the Industry where IoT provides more insights into new data and insights. IoT allows all physical objects to be connected via the internet and exchange information. IoT introduces many new insights into everyday life. Physical objects are embedded in an embedded system with electronics, software, sensors, and network connectivity. So it is easy to collect, share, forward information and collaborate between embedded devices [4].

In research conducted by [5], there are several issues related to IoT in Indonesia, including frequency spectrum, device standards, security standards, business models, and the IoT ecosystem in Indonesia. Examined from both the academic perspective and the IoT Industry side, there are many good points of view as a basis for consideration. Based on the International Telecommunication Union (ITU) recommendation, it recommends five types of BM, namely device provider, network provider, application provider, platform provider, and application consumer. The results of interviews with academics related to BM IoT suggest that if you want to have a business with an IoT ecosystem, it is advisable to take specific BM to meet government needs. Academics also see that the growing development of IoT service providers in Indonesia is BM Application Provider. BM is considered to be the fastest to adapt in the IoT era.

2. 1. Business Model

The Business Model (BM) is a lens on which the company is based because it describes what products or services are provided, how they are created and delivered, and how profits can be generated from them [6].

In general, the development of new products and services requires new management to run the business. Where the business model is formed to many can adapt to share uncertainties. Companies that depend on innovation require a systematic approach to managing business processes and operations to test the feasibility of the planned product to minimize risk-sharing [7].

There are four BM methods to describe and build a business model: a) Business Model Canvas, b) Lean Canvas, c) Zenn's Business Model, d) Non-Profit Business Model. Table 1 shows the differences between these BM methods from 5 essential aspects in business [8].

BM Canvas is a method for describing the ontology of a business model. On the other hand, Lean Canvas is a method for defining a new startup business model. Zenn BM is a method for describing strategic thinking and studying business models as they run. Non-profit BM is a method for describing businesses that create value for social causes [8].

IoT, which is a business that also relies on innovation, requires a mature strategy. Companies must be flexible to adapt to the environment outside the company, especially information technology that continues to develop [7].

The development of BM by innovating can be carried out by internal and external company analysis. In research conducted by Rub [9] entitled "An Examination of Barriers to Business Model Innovation", they analyzed the barriers to innovation in BM in incumbent companies. They detect several obstacles as well as approaches to find solutions. An important aspect of this study is that external barriers to BM innovation exist in incumbent firms. They, therefore, distinguish between internal and external barriers to BM innovation.

2. 2. Lean Canvas

Designing a business with Lean Canvas can be divided into two major parts, namely products and markets. These two significant parts will be

interconnected and iterated during the design process. The method in this case study was carried out using Lean Startup Methodology. Lean Startup is a software development methodology with Agile and simple concepts [10]. Seven stages must be met and sequentially as follows: 1) problem and customer segment, 2) unique value proposition, 3) solution, 4) channels, 5) revenue stream and cost structure, 6) key metrics, 7) unfair un-advantage.

In contrast to the Business Model Canvas (BMC), which has been popular in recent years, Lean Canvas is more suitable for developing new businesses that focus on entrepreneurship [11]. Here is a comparison of Lean Canvas and BMC in Table 1:

Table 1: Canvas Comparison

Model	BMC	Lean Canvas
Author	Alex Osterwalder	Ash Mourya
Ease of use	Easy to develop the product-centric business model	Easy to focus on entrepreneurship and focus on uncertainty and risk in startups
Popularity	Very Popular	Not as popular as BMC
Value Created	Suitable for assessing the feasibility of an idea.	Focus on solving problems that exist in customers
Purpose	Very helpful in creating value in the business strategy for two or three of what is in the business strategy	More specific than BMC and quickly defined for one particular customer segment
Target	New business and existing business	Especially for startups
Additional Elements	Risk & Value	The Problem, Solution, Key Metric
Approach	Describe infrastructure, resources, finance, and anticipated business revenue	Not always focused on the customer because there are no products sold yet
When to apply	When the organization's values, goals, and environment are clear enough, and can be used as a starting point for designing a value proposition.	When the organization has a very new initiative and works on lean startup principles, use lean canvas.

2. 3. Porter's 5 Forces

In another paper, analyzing the business requires several techniques. Where business needs analysis can be used when an organization changes. Based on identifying needs and creating new solutions to provide added value to stakeholders [12]. There are some business analysis techniques, such as MOST Analysis, Resource Audit, PESTLE analysis, SWOT analysis, Porter's Five Forces. Each analysis has several advantages. MOST analysis provides the advantage of identifying the objectives of the company [12]. Resource Audit provides information on the company's strategic position and feasible strategic options [13]. PESTLE analysis is used to identify the company's external factors, which can be used as considerations for making a company strategy [14]. SWOT analysis is an method to analyzing that used to evaluate the 'strengths', 'weaknesses', 'opportunities' and 'threats' involved in an organization, plan, project, person or business activity. [15], [16]. Porter's Five Forces analyzes the overall industry threats, emphasizing five topic threats: business competition, bargaining data of buyers & suppliers, barriers to new entrants, and barriers to substitute products [17], [18].

As the name suggests, this method can analyze business strengths by looking at five aspects of consideration. The five forces are the threats posed by competitive rivalry, influential buyers, powerful suppliers, potential new entrants, and substitute products [18] as described in figure 1. The method introduced by Michael E. Porter can describe the business environment and help analyze the strengths when in a competitive environment to form strategies that affect company performance [19].

Figure 1. Porter's Five Forces [31]

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2. 4. SWOT Analysis

SWOT analysis is a tool used for strategic planning and management in organizations. It can be used effectively to build organizational and competitive strategies. Following the Systems approach, the organization is a whole that interacts with its environment and consists of: various subsystems. In this sense, an organization exists in two spheres, one within and one within itself; others are outside. It is necessary to analyze this environment for strategic management practices. This organizational process and its environment are called SWOT Analysis[15]. Organizations today operate in an environment that is changing faster than ever. Analyzing the implications of these changes and modifying how the organization reacts to them is known as a business strategy [16].

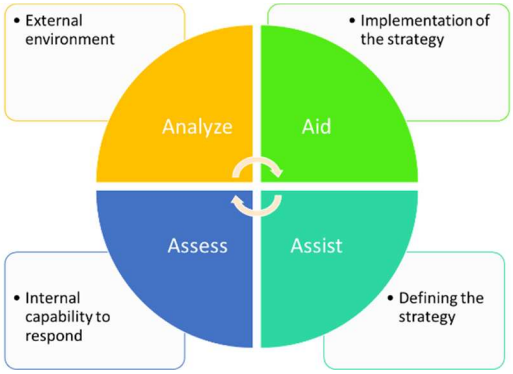

Figure 3. Typical Scenarios using SWOT

2. 5. In-depth Interview

Interviews are one way to collect data directly from participants. Interviews are significant to be able to reveal a truth instantly from participants who are directly related. Interviews were conducted with goal orientation. When the interviewer asks predetermined questions, the interview is structured. In the same way, if the interviewer has a record of the scope or topic of a particular issue, it is a semi-structured interview. With this method, there is no specific order in the interview. The problems submitted are limited to certain zones, and if during the interview topics develop, different points will continue to come.

On the other hand, unstructured interviews are more like everyday chatter. There are no predefined specific topics. This method is considered open interview or ethnographic. If the interviewer does not follow the list of questions prepared before the interview, the structured interview can change to a semi-structured or unstructured interview [20].

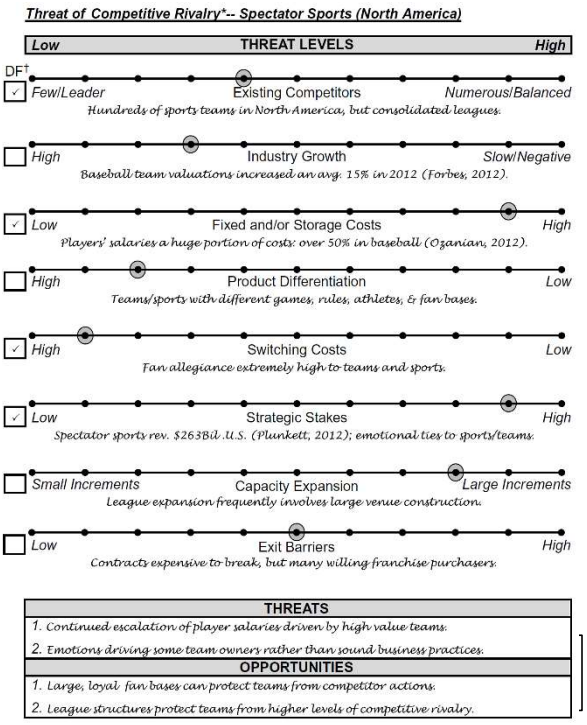

Figure 4. Example of Dobb's Industrial analysis template

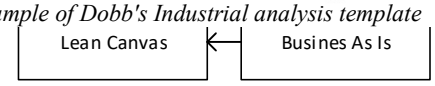

Figure 2. Methodology

3. RESEARCH METHOD

The approach of this study is the qualitative approach. Qualitative research focuses on how researchers present information by "narratives," data usually consists of assessing several types of measuring instruments [21]. A qualitative approach is expected to direct interaction with data providers, participating in several activities by observing and measuring each action as it is [22].

In this study, collected data through In-depth Interviews with several employees and essential players in PT. XYZ. They are the Chief Information System, two Business Analysts, a product manager and an engineer. The chief information system is expected to get a strategic view and strategy for new business in the company. With business analysis, it is hoped that information about the business is not limited to market potential, existing business processes, finance and human resources planning. Product managers and engineers are expected to get technical details related to a technical perspective for IoT businesses in the new industry.

All information obtained is mapped to illustrate the company's environment. As well as to

identify all information and several stakeholders who play a role in this business, a business model canvas (BMC) is used. An analysis was carried out with Porter's 5 Forces to see some potential challenges and risks in the IoT business's competitiveness. In collecting data for analysis, the framework developed by Dobb's [18] is shown in Figure 4.

After the data is taken, then data processing is carried out, which is divided into two parts [23], namely: editing (reviewing data that has been collected) and coding (classifying data to facilitate analysis).

Before designing the lean canvas, see business as a reference and look at several threats analyzed previously with porter's five forces & SWOT. In the final part, the lean canvas design adopted the one developed by Ash Maruya. Ash Maruya runs under Lean Canvas Spirit (Fast, Concise, & Effective Startup) [24]. All step of this research is described in figure 3.

4. RESULT S & DISCUSSION

4.1 IoT Business in Indonesia

The trend of hardware and applications connected to the internet is increasing every year. The IoT market in 2022 is estimated at IDR 355 trillion, with 400 million devices connected to the internet [25]. The growth of IoT in Indonesia has several industrial sectors. It is predicted that IoT in agriculture has the highest market potential, namely 30.48%, economics and trade 20.48% and government 17.62% applications to provide the greatest benefits for society and the country. The development of IoT is known to be slow due to several factors. The biggest factor faced because of a big change is the belief in new technology, and also, the technology has not been implemented en masse. So many questions arise regarding data security [26].

IoT in terms of potential in Indonesia, the industrial sectors that have the most potential to be developed are health and transportation. But besides that, because IoT technology is still not common in Indonesia, this will be a difficult choice for the industry and can be a good potential or even harm the industry. In the future, it is estimated that because the IoT ecosystem is not yet common, what will develop are closed or individual-based IoT applications, such as home automation, retail services, and smart cities that will have high needs. [5].

Based on data [27] that IoT utilization in Indonesia can produce productivity worth Rp. 1638.9 Trillion in 2025 through increasing economic growth in various sectors such as the transportation, mining, agriculture, forestry, fisheries and health industries. Based on several previous predictions, the IoT business in Indonesia will grow rapidly every year. There is a huge potential that the market will experience a delay in market growth due to the Covid-19 pandemic.

4.2 Result

This chapter will be presented in two parts. The first part will explain the data that has been obtained and matches in business as is. The second part will describe the lean canvas design as a recommended business model to be carried out.

4.3 Business Model “As Is”

Based on interviews and field observations, the "*as is*" business model is mapped with BMC, which has nine elements as shown in Table 2.

Table 2. Busniess "As Is"

No	BMC Element	Business “as is”
1	Value Preposition	Integrated IoT service provider Reduce inefficiency Client business optimization Custom dashboards
2	Customer Segments	Water Supply Company
3	Channels	Direct Marketing Partnerships/Distributors
4	Customer Relationships	Long term contracts Aftersales service(7/24) Product and service warranty
5	Revenue Stream	Sales of IoT devices Network Services Pay per transaction
6	Key Activities	IoT Devices R&D Production Marketing Monitoring
7	Key Resources	Human Resources Raw Materials Financing
8	Key Partners	Raw Material Supplier Product Standardization Company Fabrication Company
9	Cost Structure	Raw Material device iot Human resources Office rental Cloud rental Tower rental

		Product marketing costs Development costs Licensing fees and product certification

4.4 Analisis SWOT

From the table above, perform a SWOT analysis to help formulate the proposed business model next. The following are the results of the SWOT analysis for the as-is business model:

4.4.1 Value Prepositions

The company has integrated services into the existing business. As a company with a professional background of more than 50 years, the quality of service can be guaranteed. With this value proposition, there is a threat that other companies can collaborate to build the same integrated system as well. However, by understanding more specific problems, the solutions offered can be better than business competitors.

4.4.2 Customer Segment

Prospective customers are targeted at the water supply segment, not direct water users. This scenario helps focus the service on a few large customers, not consumers. The old business models make it not focus on the segment in detail with specific customer criteria. So that sure customers can not get top service. However, if the customer criteria are clear, it can increase revenue potential more quickly.

4.4.3 Channels

The company already has experienced people in the water sector to enable direct marketing partners/distributors and is well indexed. However, there is no access channel in the form of social media to provide education, and there is also no concept of building brand awareness. This way causes direct marketing to focus too much on one person. It Creates a high risk of abuse of authority. Therefore, having social media or a website is an opportunity to make it easier for potential customers to find, contact, and discuss customer needs.

4.4.4 Customer Relationships

Political relations and service reputation with some customers are well established. However, with a long employment contract, the relationship will be tenuous if there is a change in the political lobby. There is a political condition of the dominant party in one area that can hinder business relations. Therefore, long contracts that are not accompanied by efficiency have the potential to lose money. The contract policy can be carried out in stages, either years or medium term for five years, hoping that political conditions in 5 years will not change significantly.

4.4.5 Revenue Stream

Due to the pandemic, income can decrease, and the pay-per-transaction scheme can be detrimental because income is also based on the availability of internet service providers (outside the company, it cannot be controlled). If there is a decrease in revenue, there will be a decision to close the business unit. So that another opportunity to overcome this is to diversify the business in line with the core business.

4.4.6 Key Activity

The existing business processes are running well. However, the R&D process takes longer than buying finished goods. The supply chain process takes a long time to procure because they are unfamiliar with the new business. Setting a selling price that is too high for customer expectations and not achieving SLA is a significant threat to this business. Therefore, there is an opportunity to control and strengthen cooperation by building good relationships with stakeholders.

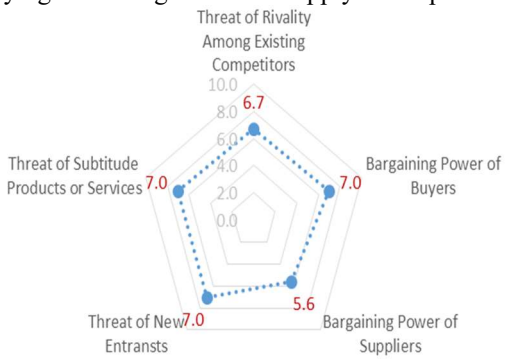

Figure 5. Five Force's Analysis Results

4.4.7 Key Resources

Resources are complete in supporting business development, and also existing business processes require several functions to be involved, so it requires many employees

4.4.8 Key Partners

Relationships with suppliers, certification, and assembly companies are well established. It was achieved easily because of the reputation of PT. So far, XYZ from other businesses has established good relationships with stakeholders.

4.4.9 Cost Sturcture

Experience of PT. XYZ has been established for over 50 years and can be trusted to manage a predetermined budget for a project. Most of the materials for IoT Devices are from abroad, requiring significant capital as well. In addition, an increase in the UMP on inflation will also increase company spending.

4.5 Business Mapping

The results of interviews and questionnaires that have been carried out are as shown in Figure 5.

From the questionnaire results, it can explain that the threat from competitors is relatively high at 6.7. The results show that well-known competitors' products cause intense rivalry, competitors' R&D speed is much higher, and competitors have good political affinities.

On the other hand, the bargaining power of buyers is relatively high. Bargaining power is due to a change in policy from buyers to use a digital system. However, although the bargaining power of buyers is relatively high, other threats also arise. The danger is that the buyer is not familiar with the current technology, making it challenging to introduce new technology. The buyer always waits for several requirements for release certification from the government, such as broadcasting permits and SNI. However, this could also be an opportunity for buyers who are still open to renewable IT technology. XYZ company's opportunity to provide knowledge-sharing services to attract buyers' attention to the products offered.

Another threat is that because of the dominance of the buyer, which is a regionally owned business entity, the procurement of goods is quite complicated to be associated with several other regional institutions. It does not end here, some buyers have very different characteristics and management in each region, so the business model of cooperation offered must also be different for each buyer. There are other factors in the form of political issues that are also present in each buyer.

The result in the third is the relatively low bargaining power of suppliers. Here it proves that PT. XYZ does not yet have a strong position against suppliers. It causes there are several problems in the procurement of goods and services. These problems are: 1) there are only a few suppliers who can provide offers, 2) some principals (IC manufacturers) have a business model that does not allow goods to be sold freely, 3) the knowledge of the procurement team regarding materials is deficient, 4) IC stock in the market limited, 5) most of the materials are goods that must import.

The fourth situation is the company's position against threats as new entrants in the IoT business. The results obtained in point 7 illustrate the condition that the threat of new entrants is relatively high. There are concerns that the price and technology of new entrants are better and more flexible. Licensing issues related to new technology are also a threat for newcomers to enter this business. On the other hand, there are opportunities to work with newcomers or incumbents in this business. It is also hoped that the market growth will be more comprehensive with the incumbents and new entrants.

4.6 Purposed Business Model

Based on the business mapping that has been running at the company in the form of a business model canvas “as is”, here is the lean canvas “to be” design, with an explanation of each element:

4.6.1 Problem & Customer Segment

To describe the market to be targeted, the help of segmenting-targeting-positioning analysis is used. Segmentation is done by:

- Geographic: specific city, district, or region
- Behavior: technology minded,

The segmentation for smart meter products, the XYZ company, is a water/gas management company operating on the island of Java with more than

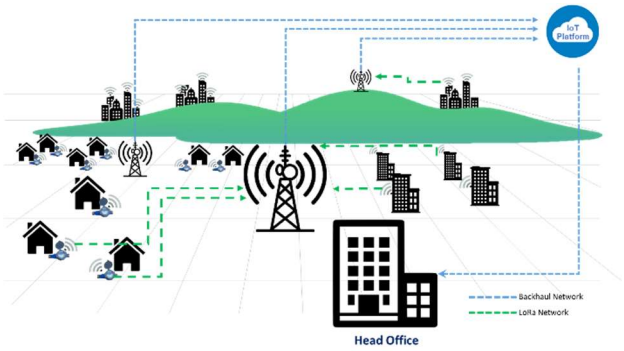

Figure 6. LoRaWan Network

10,000 connections for homes/industry, where the company will digitize by utilizing the IoT smart metering system technology.

The problem raised is:

- The high amount of water/gas loss
- High non-revenue water/gas (leakage, late billing, not paying bills)
- Handling old water/gas leaks
- Unstructured and organized billing

According to interviews and discussions with several respondents, several local governments are targeting a smart city. With this, opportunities for IoT businesses, specifically in smart meters, are very open.

Many IoT smart meter businesses have started, but most do not offer a total solution product. So it only sells parts of the smart metering system.

4.6.2 Unique Value Proposition

Based on the profile of the prospective customer, the designed unique value proposition is:

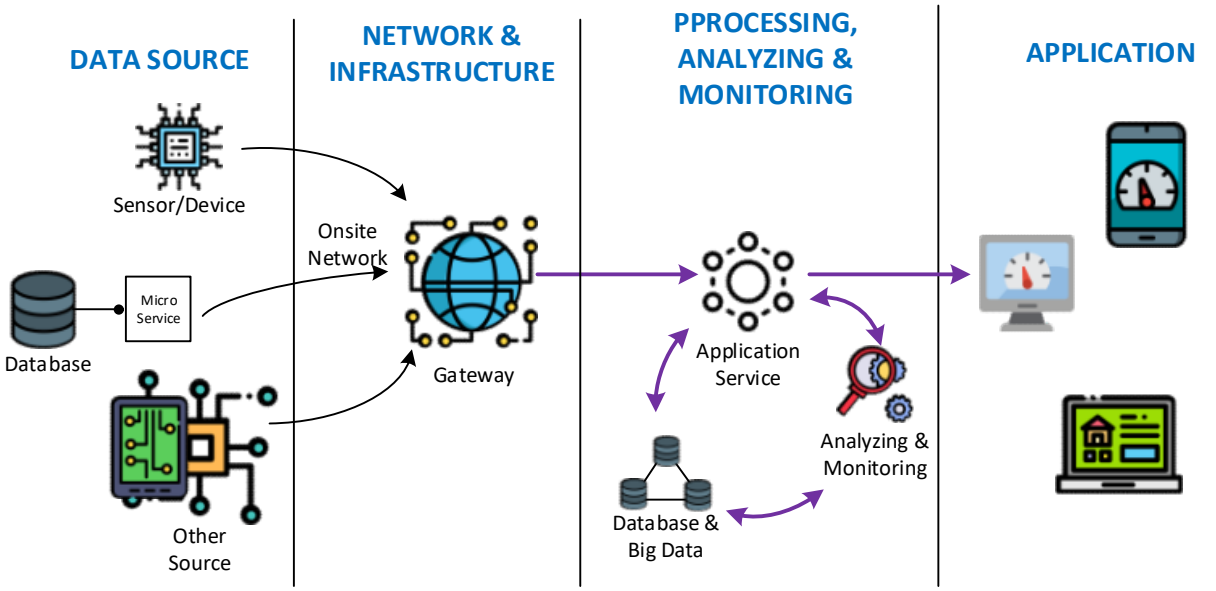

Figure 7. System Architecture

Produce smart metering system products with integrated services and transaction flexibility

With the services provided, it is hoped that it will have a positive impact on customers:

- Decreased amount of water/gas loss
- Speed up the process of finding leaky pipes
- The monthly fee billing process can be well documented
- Integrated with a smart city echoed by the government, both central and regional

4.6.3 Solution

In terms of technology, three alternative solutions can be chosen to solve the existing problems. There are three most common classes of smart meters: Automated Meter Reading devices (AMR meters), AMR meters with enhanced capabilities, and Advanced Metering Infrastructure (AMI) meters. [28].

AMR makes it possible to submit data for reports once a month. AMR allows household users to access their usage history data from time to time. Several techniques can also be used so that AMR can send data more than once a month and offer data visualization for easier usage monitoring. This characteristic is an AMR with enhanced capability.

The technology topology for data communication networks is depicted in Figure 6. The communication network uses the standard for the LoRaWan (Long Range Wide Area Network). This network is legal and can be used in Indonesia based on the Regulation of the Director-General of Resources and Equipment of Post and Information Technology Indonesia number 3 of 2019 [29].

With a small data packet and wide network coverage, the LoRaWan network was chosen to be the solution. One data receiving tower can accommodate 1000 devices. So that infrastructure costs will be lower. The Lora module is cheaper than the 2G/3G communication module from the device side. As well as low power consumption makes LoRa a superior choice as a solution. While offering a variety of similar technologies, cellular networks fail to meet the most important factors of low cost and low power consumption [30]. The system is designed for fast data and up-to-date storage. Figure 7 is a system overview for this smart meter solution.

The service solution provided to customers is a smart metering system that is integrated and flexible in the payment process. The main feature of the smart meter system is an integrated information system with other smart services.

In addition, the solution offered is in the form of a business model that does not burden the client with a large investment. The investment costs for infrastructure towers, hardware procurement, and application servers are packaged in managed services that are only billed every month. This solution helps clients without having to invest and is packaged in structural maintenance costs or meter maintenance costs in general.

Manage service solutions make it easier for clients to implement smart meter systems more quickly. All investments are charged to PT. XYZ, which is an

integrated IoT smart metering system service provider.

However, if the client wants to create a business model combination, it will be possible. For example, clients are more interested in buying various smart meter brands but still using the application provided by PT. XYZ. So that for hardware, an investment is made, but for applications, a managed services model is carried out.

Perhaps this is the easiest solution to choose because of several potential clients, and it is still possible to invest with assistance from local and central governments.

4.6.4 Channel

Channels describe how the business owner relates to the client. The following are some of the channels used to connect products with clients:

- Brand Awareness

Third parties are used to incase brand awareness. The methods used vary, both online and offline media. The main target of brand awareness is from PT XYZ clients and end-users, namely users of IoT applications and hardware who are in their homes or office buildings. In this case, the customer is PDAM (local water supply company) PGN (Indonesian natural gas transportation and distribution company).

- Evaluation

Prospective clients can see several product testimonials on the company portfolio page. The testimonials are summarized on one website page.

Photos of products and systems are explained from various points of view, such as technical, business, and layman. So that prospective clients get a clear picture of the

- Purchase

Product purchases must go through a transparent and open procurement process to maintain the company's good name. The payment model offered can be in the form of a rental system or a one-time purchase. The rental payment model is preferred. The one-time purchase model will burden the client because they have to make a significant investment. While the rental payment model, there is no investment made by the client. The client only needs to pay monthly rent without having to budget for maintenance costs.

- Delivery

Regarding the payment model, delivery can be done using a device rental model or a one-time purchase with a delivery service rental model carried out continuously with a predetermined SLA agreement. If with a one-time purchase model, delivery is only carried out by training. Focuses on how to use the product or system that has been purchased.

- After-Sales

After-Sales are one of the crucial points in product sales. After-sales for the rental model are agreed with a contract agreement with a specific deadline. So there is no need to doubt that the services that will provide are more responsive. While after-sales buy once, the product warranty period will give by guaranteeing the product will not be in trouble as long as the warranty period is still valid. For all of this, there will be a call center provided both via email and telephone to submit complaints, inputs, and suggestions that help make the product even better. In the smart metering system android application, there is also a customer complaint menu to quickly and precisely deliver information.

4.6.5 Revenue Stream and Cost

The primary source of income in this business is the sale of IoT devices and information system subscription fees. While the elements of costs incurred consist of:

- Material costs: electronic components, operational consumables, and device production.
- Production Costs: device production services, namely Electronics Manufacturing Services (EMS)
- Labor costs: field workers, a team consisting of network technicians, and IoT technicians.
- Overhead costs: management fees and project overhead costs. Following the standards of PT. XYZ. The cost of electricity bills and network maintenance
- Marketing costs: branding services, entertainment costs,
- Rental fees: server rental, office & furniture rental, laptop rental, tower rental/other public facilities.
- R&D costs
- Forwarder service fee
- Cost of consulting services
- Certification and licensing fees

4.6.6 Key Metrics

Key metrics are used as indicators or parameters that show how the business is performing.

The key metric used in this business is the number of installed IoT devices and or the smart meter system application utility. Contract agreements that are targeted are in the long term, namely five to ten years. Services are packaged with a managed services model.

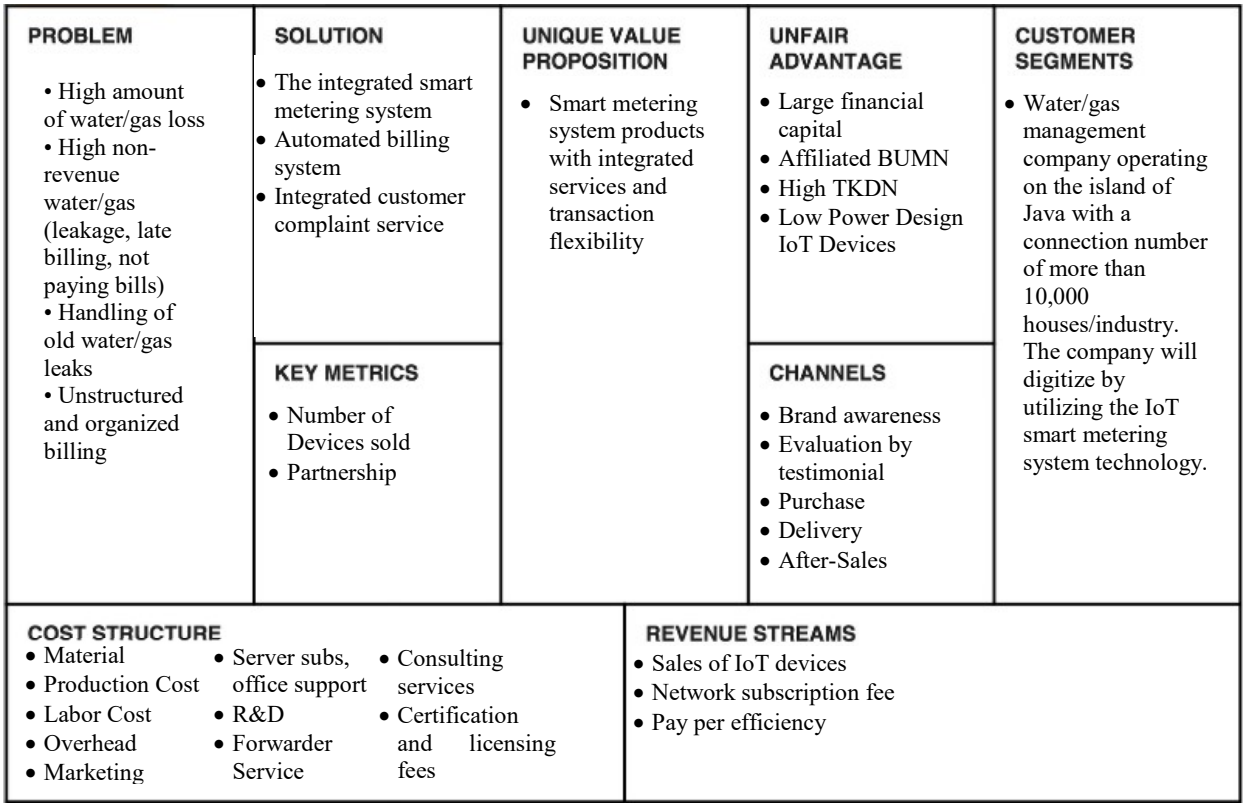

Figure 8. Lean Canvas Puposed Business Model

In addition, the company is required to choose the best partner to support the business. Such as partners in product development, IoT networks, and commercialization.

4.6.7 Unfair Advantage

PT. XYZ has several unfair advantages in running this business compared to competitors:

- Large financial capital
- One of the leading companies in Indonesia with a strong foundation of existing business portfolio
- One of the subsidiaries of a State-Owned Enterprise (BUMN)
- High TKDN (Tikat Kandungan Dalam Negeri)
- Very low power IoT devices
- Has several certificates, namely: ISO 9001:2015 Quality Management System, ISO 14001:2015 Environmental Management System, ISO 45001:2018 Occupational Health and Safety Management System, ISO 55001:2014 Asset Management System and ISO 37001:2016 Anti-Bribery Management System.
- R&D in Indonesia

5. CONCLUSION

From the analysis of the as-is business model using SWOT and Porter 5 forces, it was found that there were several gaps that business development was not based on a problem, and a broad market segment made it difficult for this business to go through small stages. So that the development of Information Technology (IT) can be less targeted at the existing target market, several points of business model improvisation are proposed that can be used as a reference for developing IT-like business models with the Internet of Things concept.

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