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ASSESSING PT. BITHOUSE'S PRIORITY STRATEGY IN ACHIEVING THE ARTIFICIAL INTELLIGENCE MARKET

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ABSTRACT

This research paper aims to explore the managerial strategies adopted by PT. Bithouse, an IT consulting company specializing in AI application development, penetrates the artificial intelligence market in Indonesia. The study employs a qualitative research method to gain in-depth insights into the strategic approaches used by PT. Bithouse. Through interviews, observations, and document analysis, the research seeks to provide a comprehensive understanding of the company's management practices, decision-making processes, and adaptation strategies in the rapidly evolving AI landscape. The findings of this research can contribute to the knowledge and understanding of effective managerial strategies for AI-focused companies operating in emerging markets like Indonesia.

Keywords: Artificial Intelligence; Decision-Making; Digitalization; Managerial Strategy; IT company; AI Project

INTRODUCTION

Artificial intelligence has emerged as a transformative technology with immense potential for various industries, including IT consulting (Ginantra et al., 2020; Suryono, 2019). PT. Bithouse, a leading IT consulting company in Indonesia, recognizes the significance of AI and has strategically positioned itself to tap into this promising market. This research aims to shed light on the managerial strategies employed by PT. Bithouse in navigating the complexities and opportunities presented by the AI industry in Indonesia.

To accomplish the research objectives, a qualitative research approach will be employed. Qualitative methods allow for a detailed exploration of the managerial strategies adopted by PT. Bithouse. The research will involve interviews with key stakeholders, such as senior executives, project managers, and AI specialists within the company. Additionally, observations of strategic decision-making processes and analysis of relevant documents, such as business plans and market research reports, will be conducted. This multi-method approach will provide a comprehensive understanding of PT. Bithouse's managerial strategies and their effectiveness in the AI market.

The research findings are expected to shed light on the effective managerial strategies employed by PT. Bithouse in successfully penetrating the artificial intelligence market in Indonesia. The qualitative analysis of interviews, observations, and document analysis will provide insights into the company's adaptive management practices, decision-making processes, and market adaptation strategies. By understanding and evaluating these strategies, other AI-focused companies can learn from PT. Bithouse's experiences and potentially enhance their own managerial approaches in emerging markets. This research contributes to the existing body of knowledge on managerial strategies for AI companies and provides valuable insights for practitioners, researchers, and policymakers in the field.

RESEARCH METHOD

The research methodology employed in this study is a descriptive qualitative approach, utilizing interview and literature review techniques. The primary focus of the interviews was the board of directors of PT. Bithouse, as well as the in-house and freelance engineers. The data collection process took place at the PT. Bithouse office located at Jln. Noja No. 110, Denpasar, during early January 2021.

The qualitative nature of this research allowed for an in-depth exploration of the managerial strategies implemented by PT. Bithouse in the context of the AI market in Indonesia. By conducting interviews with key stakeholders, including the board of directors and engineers, valuable insights were gathered regarding the company's decision-making processes, adaptation

strategies, and overall management practices in relation to AI development and market penetration.

In addition to the interviews, a through literature review was conducted to gather secondary data on industry trends, market dynamics, and best practices in the AI consulting sector. This complemented the primary data obtained through interviews and provided a broader context for analyzing PT. Bithouse's managerial strategies.

The data collection through interviews with key personnel from PT. Bithouse, consisting of I Putu Eddy S. Putra as the CEO, Reno Sacino as the Project Manager, Galih Erlangga as a Software Engineer, and I Wayan Yuditya as a Software Engineer, yielded valuable insights into the company's managerial strategies in the field of artificial intelligence.

During the interviews, I Putu Eddy S. Putra, as the CEO, provided a comprehensive overview of the company's vision, goals, and strategic direction in relation to AI development and market expansion in Indonesia. His insights shed light on the top-level decision-making processes and the strategic priorities of PT. Bithouse.

Reno Sacino, as the Project Manager, shared valuable information about the project management practices employed by PT. Bithouse in AI development initiatives. His inputs included details on project planning, resource allocation, risk management, and coordination with various stakeholders, all of which are crucial elements in ensuring successful AI project implementations.

The perspectives of Galih Erlangga and I Wayan Yuditya, both Software Engineers at PT. Bithouse, provided valuable technical insights. They discussed the challenges and opportunities encountered in AI application development, the tools and methodologies used, and the approaches taken to ensure the quality and effectiveness of the software solutions delivered to clients.

These interviews served as a primary source of qualitative data, capturing the perspectives and experiences of key individuals within PT. Bithouse. The information gathered from these interviews, when combined with the findings from the literature review, formed a rich and comprehensive dataset for analysis and interpretation.

By employing a combination of interview-based data collection and literature review, this research aimed to gain comprehensive insights into the strategic approaches adopted by PT. Bithouse in leveraging the opportunities and addressing the challenges in the AI market in Indonesia. The qualitative methodology facilitated a detailed examination of the company's practices, enabling a nuanced understanding of the factors contributing to their success in this domain.

RESULT AND DISCUSSION

AI Implementation Background

The interview questions discussed the most crucial industry issues that underlie Bithouse's development of AI-based software projects. In the research, it was found that Bithouse's interest in developing AI-based projects is due to the increasingly massive phenomenon of digitalization in various business sectors.

The massive digitization and growth of internet users during the 2010s provide evidence that the slow process of traditional and manual administration will gradually be replaced digitally (Tampubolon, 2020). This is also based on the theory proposed by Marco Iansiti and Karim R. Lakhani (2020) (Iansiti & Lakhani, 2020, p. 13) which states "Digital Collision with Traditional," which states that when digital-based operational management collides with traditional photography, it not only replaces it with something cheaper, different, or of higher quality but also creates a new value proposition to serve customers in that industry.

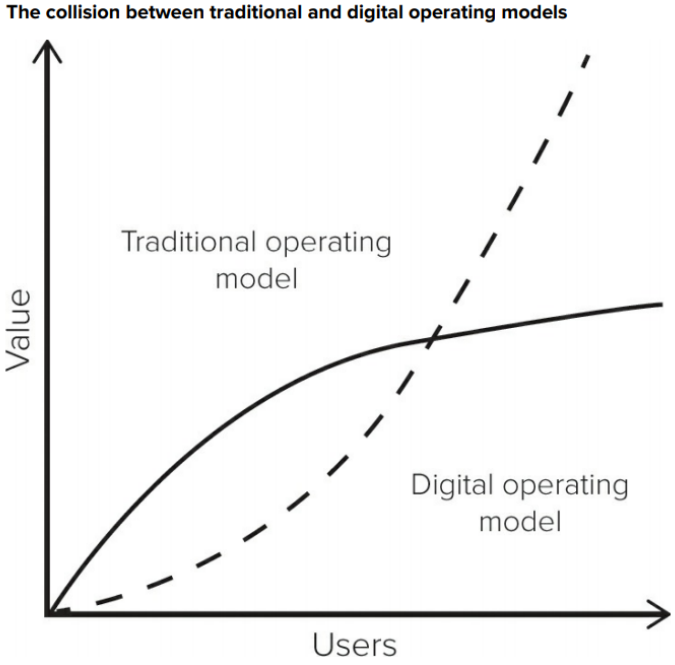

Figure 1
Digital Value vs Traditional Value Diagram According to *(Iansiti & Lakhani, 2020)*

AI in Management

The changes in jobs and workflow brought about by the use of technology require many changes from employees in terms of their skills and attitudes, and therefore a strong commitment to human resource development is needed. Canals and Heukamp (2020) mentioned Senior executives need to create a framework to ensure the acquisition of the skills outlined in the previous section such as critical technical skills needed, as well as change management skills, the ability to interact skillfully with machines, and the reinforcement of leadership traits such as coaching, and so on (Canals & Heukamp, 2020).

A particular challenge for senior executives is the need to build a collaborative culture around projects powered by Artificial Intelligence. The nature of solutions driven by AI mostly has a single function that relates to the reduction of the number of people and functions in a team. Einhorn et al., (2019) mention that the cross-functional nature of the technology often rapidly affects all aspects of the business, such as operations, HR, IT, marketing, and others. The key attributes of leadership in the AI era can be classified as follows: (Einhorn et al., 2019)

Know	Do	Be
Technology	Data analysis	Ethical, unbiased
Analytics	Judgment	Humility
Machine learning	Learning	Adaptability
Organizational models	Critical thinking	Vision—purpose
	Augmented work	Engagement
	Process reengineering	Trust
	Strategy setting	Privacy
	People development	
	Orchestrating collaboration	

Figure 2
Key attributes of leadership in the era of artificial intelligence

Availability of Human Resources for Artificial Intelligence Development

One of the limitations that AI developers often face is the lack of IT experts who specialize in the field of artificial intelligence, especially if the AI development project is carried out outside the capital city of Jakarta, where the IT scene is more developed than other regions in Indonesia. To increase the quantity and quality of digital talents in the field of AI, stakeholders from educational institutions play an important role (Kaplan & Haenlein, 2020).

At Bithouse, they offer internship training programs for students who want to delve into the intricacies of application development for both individual purposes and practical work experience from universities. Not only practical skills, but internship participants are also equipped with non-technical materials that are sometimes not taught in universities.

The observation results obtained can also be seen from what Edy S. Putra emphasized in the following interview excerpts:

Eddy S. Putra: *Thank you for having me. At PT. Bithouse, our vision is to be a leading IT consulting firm specializing in AI application development. Our goal is to leverage AI technology to provide innovative and effective solutions to our clients in various industries. We aim to position ourselves as the go-to company for AI-driven applications, empowering businesses in Indonesia to harness the power of AI for growth and competitiveness.*

Interviewer: *That sounds ambitious and promising. Can you shed some light on the strategic direction that PT. Bithouse is taking in order to achieve these goals?*

Eddy S. Putra: *Certainly. Our strategic direction revolves around three key aspects: research and development, talent acquisition and retention, and client partnerships. Firstly, we heavily invest in research and development to stay at the forefront of AI advancements. We continuously explore emerging technologies and trends to offer cutting-edge solutions to our clients.*

Secondly, we place great emphasis on talent acquisition and retention. Our team comprises highly skilled and motivated professionals who are passionate about AI. We provide them with a conducive work environment, training opportunities, and career growth prospects to ensure their expertise aligns with our strategic objectives.

Lastly, building strong client partnerships is crucial for our success. We collaborate closely with our clients to understand their unique challenges and requirements. By forging long-term relationships based on trust and delivering exceptional results, we aim to be the preferred partner for AI development and implementation.

Interviewer: *Thank you for sharing those insights. Could you elaborate on how PT. Bithouse approaches project management in the realm of AI development?*

Eddy S. Putra: *Project management plays a critical role in our AI initiatives. We follow a systematic approach, starting from project planning and scoping, resource allocation, and risk management. Our project managers work closely with the engineering team to ensure efficient coordination and timely delivery.*

We also prioritize effective communication with clients throughout the project lifecycle. Regular progress updates, milestone reviews, and feedback sessions are integral to ensuring that the final deliverables align with the client's expectations. Additionally, we employ agile methodologies to adapt to changing requirements and maintain project momentum.

Interviewer: *It's impressive to hear about PT. Bithouse's project management practices. Lastly, could you highlight any notable technical aspects related to AI development within the company?*

Eddy S. Putra: *Certainly. Our software engineers utilize state-of-the-art tools and methodologies in AI development. They apply machine learning algorithms, natural language processing techniques, and data analysis frameworks to create robust and intelligent solutions.*

Moreover, quality assurance and testing are essential components of our development process. We ensure that the AI applications we deliver are accurate, reliable, and scalable. Our engineers also stay updated with the latest advancements in AI technologies to incorporate them into our projects, keeping us at the forefront of innovation.

Data Curation and Corporate Governance

When building artificial intelligence, there are two main components that the development team must have. Indrajit (2014) (Indrajit, 2014) mentioned the first is a collection of algorithms that build a learning model for the machine that forms the foundation of AI. The second is the data that is fed into these algorithms. Data, in this case, is what provides the system with specific intelligence. Historically, the branch of AI, namely machine learning, has focused its research on improving algorithms to produce better models over time.

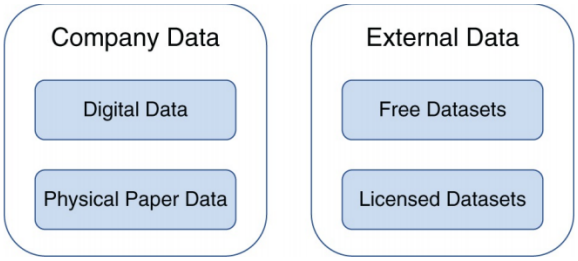

Figure 1
Classification of Data Sources in Machine Learning

While the data curation and corporate governance methods used by the PT Bithouse project manager can be explained in the following interview transcript:

Reno Sacino*: Thank you for having me. I'm happy to discuss these important aspects. At PT. Bithouse, we recognize the significance of data curation and corporate governance in AI development. Data is the foundation of AI solutions, and it is crucial to ensure its quality, accuracy, and integrity.*

Interviewer: *How does PT. Bithouse approach data curation in AI projects?*

Reno Sacino*: In our AI projects, we follow a systematic approach to data curation. Firstly, we identify the data sources and determine the relevant variables needed for the AI model. We then collect, preprocess, and clean the data to ensure its consistency and eliminate any biases or outliers.*

Next, we conduct data analysis to gain insights and identify patterns that will contribute to the development of effective AI models. This includes applying statistical techniques, machine learning algorithms, and data visualization methods to uncover meaningful information from the data.

Interviewer: *That sounds comprehensive. Turning to corporate governance, how does PT. Bithouse ensure ethical and responsible AI practices within the company?*

Reno Sacino*: Corporate governance is a fundamental aspect of our AI projects. We adhere to ethical guidelines and industry best practices to ensure responsible AI development. This includes considering factors such as privacy, security, transparency, and fairness throughout the entire project lifecycle.*

We establish clear governance policies and frameworks that guide our AI initiatives. This involves defining roles and responsibilities, implementing data protection measures, and establishing mechanisms for accountability and transparency in decision-making processes.

Interviewer: *That's commendable. Could you provide an example of how PT. Bithouse incorporates corporate governance principles into its AI projects?*

Reno Sacino*: Certainly. In one of our recent AI projects, which involved developing an AI-powered chatbot for a financial institution, we prioritized data privacy and security. We implemented strict access controls, encryption protocols, and anonymization techniques to protect sensitive customer information.*

Moreover, we established an internal committee responsible for reviewing and monitoring the chatbot's performance and ensuring that it adhered to the company's ethical guidelines. Regular audits and assessments were conducted to evaluate the chatbot's compliance with relevant regulations and ethical standards.

Formulating Solutions

Artificial intelligence-based systems are certainly built to overcome a problem. Often, the first question that comes to the mind of an AI developer is "What problem is actually being addressed and is AI the right solution to the problem?" Coveyduc & Anderson (Anderson & Coveyduc, 2020) mentioned AI developers usually conduct research using search engines on the Internet and discover various conventional business processes that can be automated using artificial intelligence. (Makridakis, 2017; Zhang & Lu, 2021) mention that various phenomena that are informed in the real world often become the background of a developed artificial intelligence system.

The stages of formulating solutions in AI development can be seen from one of the following interview excerpts:

Interviewer: *In the process of developing AI, formulating effective solutions is crucial. Could you please elaborate on your approach to formulating solutions in the context of AI development?*

Eddy S. Putra*: Certainly. Formulating solutions in AI development requires a comprehensive understanding of the problem at hand. We start by identifying the specific challenges or opportunities that AI can address. This involves extensive research, analysis, and consultations with domain experts to gain deep insights into the problem space.*

Once we have a clear understanding of the problem, we focus on defining the objectives and desired outcomes. This involves setting measurable goals and identifying key performance indicators that will guide the development process.

Next, we explore various AI technologies and methodologies that are suitable for the problem domain. This may involve leveraging machine learning, natural language processing, computer

vision, or other AI techniques depending on the requirements. We carefully evaluate the strengths and limitations of each technology to ensure they align with the desired outcomes.

Collaboration and feedback play a crucial role in formulating solutions. We engage with stakeholders, including our team of engineers, data scientists, and clients, to gather diverse perspectives and insights. This collaborative approach allows us to refine our solutions iteratively and ensure they meet the unique needs and challenges of the project.

Furthermore, we emphasize the importance of ethical considerations in AI development. As we formulate solutions, we prioritize transparency, fairness, and accountability to ensure that our AI systems operate ethically and responsibly.

Development Feedback

One of the main ways to prevent major problems from occurring in a project is by identifying and fixing mistakes as soon as possible. This way, good code will not be written based on a flawed foundation. Sutherland & Schwaber (Sutherland & Schwaber, 2016) in their scrum handbook assuming the development team uses Agile/SCRUM methodology when developing a prototype, if the feature developed for an AI project doesn't work or, most likely, works but performs a different function than what is needed for use, stakeholders need to speak up to the user/client about it. Feedback given by users regarding the functionality of the project can be used to adjust any part of the AI development.

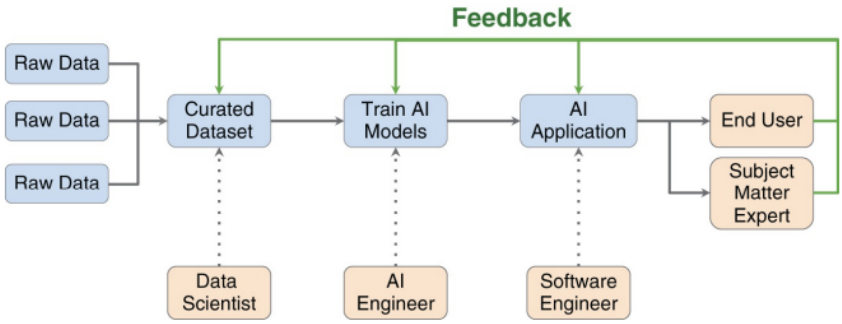

Figure 2
Feedback Flow in AI development

Technology Selection

Selecting which technologies are needed in AI development is influenced by several factors. According to Anderson & Coveyduc (2020), common factors include hardware and software costs, as well as the cost of hiring AI developers (Anderson & Coveyduc, 2020). One example of a consideration when choosing technology is "How well do the selected technologies interact with each other?" Often, a technology is chosen to be integrated into a project based on the experience of the team manager in implementing that technology.

It could also be because there are more skilled experts available in a particular technology in the job market than in other alternative technologies.Technology selection in AI project development was also explained in an interview with Galih Erlangga as follows:

***Galih Erlangga**: Thank you for having me. I'm delighted to share my thoughts on technology selection for AI projects at PT. Bithouse.*

***Interviewer**: Let's start by discussing how PT. Bithouse approaches technology selection for AI projects. What factors are considered when choosing the appropriate technologies?*

***Galih Erlangga**: At PT. Bithouse, our technology selection process for AI projects involves a careful evaluation of various factors. Firstly, we analyze the specific requirements of each project, including its scope, objectives, and expected outcomes. This helps us determine the most suitable technologies that align with the project's needs.*

Additionally, we consider the scalability, reliability, and performance of the technologies under consideration. We assess their compatibility with existing systems and infrastructure, as well as their potential for integration with future technologies. We also evaluate the availability of resources, including technical expertise and support, to ensure smooth implementation and maintenance.

***Interviewer:** That's great to hear. Can you provide some examples of technologies that PT. Bithouse commonly selects for AI projects?*

***Mr. Erlangga:** Certainly. For AI development, PT. Bithouse frequently utilizes popular technologies such as TensorFlow and PyTorch for building and training deep learning models. These frameworks offer a wide range of capabilities and have a strong community support, which allows us to leverage pre-existing models and optimize our development process.*

Moreover, we often employ cloud-based platforms such as Amazon Web Services (AWS) or Microsoft Azure for scalable computing power and storage. These platforms provide the necessary infrastructure and services to handle large datasets and perform complex computations required in AI projects.

Contributing to Open Source Projects

When improving or perfecting an AI project, maintenance steps and discussions among team members are not enough. Additional help from the external development community is also crucial. One such help comes from the community. AI development teams can publish the code base of the system as open source, which means it can be accessed and developed by the public, specifically the developer community. This is how AI can be decentralized or democratized according to Montes, Axel, & Goertzel (Montes & Goertzel, 2019).

Bithouse's effort in contributing to open source projects apart from being one of the strategies is also a benefit that can be obtained by staff. One of them is the following interview excerpt:

***Wayan.Yuditya**: Thank you for having me. I'm excited to discuss my contributions to open-source projects related to AI development.*

***Interviewer:** Open-source projects play a significant role in advancing AI development. Could you please share your experiences and contributions to such projects?*

***Wayan.Yuditya**: Certainly. I believe in the power of open-source collaboration and its impact on the AI community. Over the years, I have actively contributed to several open-source projects related to AI development.*

One of my notable contributions was to an open-source AI framework aimed at simplifying deep learning model deployment. I worked on optimizing the framework's performance, enhancing its compatibility with different hardware architectures, and improving its documentation to make it more accessible to developers.

In addition, I have contributed to open-source datasets that are widely used in training AI models. I collaborated with other developers to collect, curate, and annotate data for specific domains,

such as natural language processing and computer vision. These datasets have facilitated the development of AI models by providing valuable training resources to the community.

Moreover, I actively participate in open-source AI communities, where I engage in discussions, share my knowledge, and provide support to fellow developers. By exchanging ideas and collaborating with like-minded individuals, we collectively enhance the quality and capabilities of AI technologies.

Open-source projects have also provided me with opportunities to learn from others. I have benefited from the expertise and feedback of community members, which has helped me improve my skills and stay up-to-date with the latest advancements in AI development.

***Interviewer**: That's impressive, Mr. Yuditya. Your contributions to open-source projects have undoubtedly made a positive impact on the AI community. How do you see the future of open-source collaboration in AI development?*

***Wayan.Yuditya**: I believe open-source collaboration will continue to play a vital role in the future of AI development. The democratization of AI through open-source projects allows for widespread access to AI technologies, encourages innovation, and fosters a culture of knowledge sharing.*
As AI technologies evolve rapidly, open-source projects provide a platform for developers to experiment, iterate, and collectively push the boundaries of what is possible. By contributing to open-source projects, we can accelerate the development of AI solutions, address common challenges, and promote the adoption of ethical and responsible AI practices.

This community can give direct feedback and feature enhancements to the code base. Contributions from this community can then be integrated back into the project. With open source, parts of the AI software that are developed can be improved at no cost, without the need to recruit new team members to do so. The step of creating open source is also applied by Bit House in maintaining the life cycle of their developed projects.

Regulations Related to AI-Based Projects

Chishti, Leslie, & Millie, (2020) (Chishti, 2020) mentioned that AI can also analyze customer data almost instantly and can recommend various things or digital content based on learning the history and behavior of users of this system in the online world. The potential redundancy throughout this industry poses economic and social problems for the government.

Therefore, regulations are needed to regulate various general technical standards that determine how an AI-based system should be created. These standards can relate to various issues such as data privacy, security, product safety, accuracy, and ethics (such as managing social biases), and will be crucial for the long-term success of AI (Rini et al., 2021). Common standards will help facilitate technology integration and ensure transparency, security, and consumer protection .

Technical and algorithmic consistency across offerings will enable rule-makers to more easily assess the suitability of those standards and whether a company's offerings objectively meet them. They will also provide a benchmark for the legislative and judiciary when determining how to deal with AI in a legal capacity.

At Bithouse itself, some commercial AI-based applications that have been produced are applications in the fields of Face Recognition and Chatbots. In developing each AI project, Bithouse does not stick to a specific standard related to government regulations.

The following is an excerpt from an interview related to AI development based on current government regulations:

Interviewer: *The development of AI is gaining momentum globally. From your perspective, what are the key regulations in Indonesia that impact AI development?*

Eddy S. Putra*: In Indonesia, there are several regulations and initiatives that are relevant to AI development. One of the key regulations is the Data Protection Law, which sets guidelines for the collection, processing, and storage of personal data. This regulation ensures that AI applications comply with data privacy standards and protect the rights of individuals.*

Additionally, the Government Regulation on AI Development provides a framework for the responsible and ethical use of AI technologies. This regulation encourages transparency, fairness, and accountability in AI systems, emphasizing the need to address bias, discrimination, and potential risks associated with AI deployment.

Furthermore, the Indonesian government has launched the National AI Strategy, outlining its vision and goals for AI development in the country. The strategy aims to foster innovation, promote AI research and development, and encourage the adoption of AI technologies across various sectors.

Interviewer*: How does PT. Bithouse navigate these regulations and ensure compliance in AI development?*

Eddy S. Putra*: At PT. Bithouse, we prioritize compliance with relevant regulations and strive to develop AI solutions that align with ethical and legal standards. We have implemented robust data governance practices, ensuring that personal data is handled securely and in accordance with the Data Protection Law.*

To promote responsible AI development, we conduct thorough assessments of our AI systems, addressing potential biases and ensuring fairness in the outcomes they produce. We also prioritize transparency by providing clear documentation and explanations of how our AI technologies operate.

Furthermore, we actively collaborate with regulatory bodies, industry peers, and experts to stay updated on evolving regulations and best practices. This helps us proactively adapt our development processes and ensure compliance with any new requirements.

Interviewer*: How do you envision the future of AI regulations in Indonesia and its impact on the industry?*

Eddy S. Putra*: The field of AI is rapidly evolving, and regulations will play a crucial role in shaping its future. As AI continues to advance, we can expect further development of regulations in Indonesia that address emerging challenges and opportunities.*

I believe that future regulations will focus on fostering innovation while safeguarding the rights and privacy of individuals. They will encourage collaboration between industry stakeholders, academia, and the government to create an environment that supports responsible AI development.

These regulations will also help build public trust in AI technologies, fostering widespread adoption and benefiting various sectors of the economy. It is essential for businesses like ours to actively engage with regulators, contribute to policy discussions, and ensure that our AI solutions comply with evolving regulatory frameworks.