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Prioritizing the product development roadmap of Zains SAAS using Analytical Hierarchy Process (AHP)

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Abstract
Purpose: This study aims to prioritize the development of Zains using the Analytical Hierarchy Process (AHP).
Research Methodology: This study combines FGD and survey data to prioritize Zains' development using AHP. Key criteria include market demand, financial impact, technology, efficiency, compliance, and security. AI-powered financial insights are identified as the top development priority.
Results: These findings provide insights for CNT to optimize the development of Zains and to maintain their relevance and competitiveness in the SaaS market. These recommendations are beneficial for other SaaS providers facing similar challenges.
Conclusion: The study concludes that AI-powered financial insights represent the most strategically valuable development path for Zains, aligning with both market needs and internal strategic goals. Prioritizing this alternative will strengthen Zains' position in the competitive SaaS industry and enhance its value proposition to users.
Limitation: This study is limited to the perspectives of internal stakeholders within CNT and may not fully capture customer preferences or external market dynamics. Future research should incorporate customer-based evaluation and long-term performance metrics.
Contribution: This research contributes to strategic decision-making in product development by integrating AHP with qualitative insights, offering a replicable framework for prioritization in the SaaS sector. It also provides a practical roadmap for Zains and similar platforms aiming to align development initiatives with organizational goals and market trends.

Keywords: *AHP, ERP, SaaS, Zains*

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1. Introduction

In 2022, the Indonesian government launched the "Indonesian Digital Roadmap 2021-2024" to accelerate digital transformation across various sectors. The Indonesian digital roadmap serves as a strategic guide to support digital transformation across four sectors in Indonesia: the digital infrastructure, digital government, digital economy, and digital society. This roadmap comprehensively outlines policy directions, implementation strategies, and targets for accelerating digital transformation in Indonesia. The digital era has revolutionized the way we live, work, and conduct businesses. To remain competitive, companies must embrace digital transformation (McKinsey, 2023). Digital transformation helps companies to implement technology in all operational aspects. In addition to changing work methods, this transformation enhances the experience of customers, employees, and other stakeholders (Habibillah & Hadjri, 2023). Digital transformation is not just about technology but

also about company culture and work methods. It is about embracing change and leveraging technology to develop all business lines (Forbes Tech Council 2022).

The (SaaS) market in Indonesia has been anticipated to expand rapidly in recent years. This expansion is fueled by the adoption of cloud computing solutions, a rise in the number of SaaS companies, and government initiatives promoting digital transformation. In 2022, the SaaS market in Indonesia was valued at USD 372.53 million and is projected to reach USD 736.64 million by 2029, with a compound annual growth rate (CAGR) of 12.03%. This growth is driven by Indonesia's burgeoning economy, increased digitalization, and the growing number of tech-savvy individuals and businesses.

SaaS solutions in Indonesia cover sectors such as finance, manufacturing, healthcare and retail. Key SaaS applications include Customer Relationship Management (CRM), Human Resource Management (HRM), Financial Management, Sales Management, and Enterprise Resource Planning (ERP). Both small and medium-sized enterprises (SMEs) and large corporations benefit from SaaS solutions. SMEs are attracted to SaaS because of their lower costs and scalability, allowing access to advanced software without significant upfront investments. Conversely, large corporations use SaaS flexibility to manage complex and distributed-application environments. Major players, such as IBM, Microsoft, SAP, and Oracle, are expected to continue driving market expansion through mergers, acquisitions, and product innovations. The SaaS model is used because of its flexible scalability, cost-effectiveness, ease of remote maintenance, and various other advantages (Mell & Grance, 2011).

Indonesia has many SaaS providers for Financial Management needs, such as Jurnal.id, Zahir Accounting, Accurate, and Zain. Generally, they offer features that facilitate financial management, especially for SMEs. Standard features usually available include recording financial transactions (income and expenses), generating invoices, managing accounts receivable and payable, performing bank reconciliation, and creating financial reports, such as balance sheets, income statements, and cash flow statements.

In 2024, PT. Citra Niaga Teknologi (CNT) launched a SaaS-based ERP product for Financial Management solutions called Zains. This product has the advantage of customizable financial reports, according to its needs. This feature is a strategic tool in their operations, reflecting the global trend of increasing SaaS adoption in the financial sector (Liang, You, & Liu, 2010). Currently, Zains is widely used by NGOs, especially those involved in donation collection, such as Zakat Infak Shodaqoh (ZIS). There are approximately 114 LAZ recognized by BAZNAS and 194 zakat management institutions included in the Forum of Zakat Organizations (FOZ). The use of SaaS solutions by these institutions shows a trend of increasing digital transformation in religious and social organizations (Lallmahamood, 2007). However, despite having many benefits and unique capabilities, Zains' subscription growth is relatively slow compared with the potential SaaS market in Indonesia. This raises questions regarding the performance and marketability of strains in the current landscape. This stagnation indicates the need for thorough evaluation and optimization (Dionysopoulou, 2020; Mohamed & Farahat, 2019).

With increasing competition, strains need to maintain their relevance and efficiency when facing rapidly changing technology trends, both in terms of scalability of technology infrastructure, relevance of features to customer needs, and improvement of after-sales services. Considering that product improvement costs are not low, prioritization of product development is necessary. In this thesis, the author provides recommendations for CNT management to determine the best variables to prioritize the development of strains. Based on this background, the author titled the thesis "**Prioritizing the Product Development Roadmap of Zains SaaS Using Analytical Hierarchy Process (AHP)**."

1.1. Issue Identification

The slow growth of strains is caused by several factors, including the lack of a systematic approach to product development and the high frequency of bug fixes, indicating stability issues. It is crucial for CNT to understand the interests and concerns of all stakeholders, from the Board of Directors to priority customers, to design effective strategies. The implementation of the Analytical Hierarchy Process

(AHP) method is essential in decision making to determine product development priorities. This will help Zains increase their market relevance, optimize product quality, and drive better growth.

1.2. Research Questions and Research Objectives

The research questions supporting this analysis are as follows:

1. What criteria are needed to evaluate the decision-making process for prioritizing product development?
2. Which alternative solutions should be prioritized to support product development?
3. What action items and implementation plans are required to establish a product development roadmap?

The objectives of this study were as follows:

1. Identifying the factors that determine product development priorities.
2. To propose the most appropriate alternatives to prioritize for development.
3. Select the best solution to create the most suitable roadmap for product development.

2. Literature Review

2.1. Theoretical Foundation

2.1.1. Focus Group Discussion (FGD)

Focus Group Discussion is a qualitative research method that involves structured discussions in small groups led by a moderator to deeply explore a particular topic (Krueger, 2014; Zairina, Wibisono, Ngaliman, Indrayani, & Satriawan, 2023). Group discussions allowed researchers to understand participants' perceptions, attitudes, and experiences related to the topic being studied more comprehensively than individual interview methods. The main goal of FGD is to explore participants' views, perceptions, and understandings of a particular topic. Its main benefits include the following.

1. Group discussions allow participants to influence each other in formulating and expressing their views, resulting in deeper insights compared to individual surveys.
2. FGD can capture various perspectives and experiences from participants, allowing researchers to understand issues from multiple viewpoints.
3. Group discussions can be used to test the initial hypotheses or assumptions of researchers, as well as to identify aspects that might have been overlooked in initial research.

In this research, FGD was used to gain in-depth insights from various stakeholders regarding the development of the Zains product. Involving the BOD and various internal stakeholders, FGD will help identify specific needs, issues, and preferences related to the development of Zains' features and marketing strategies. Researchers will compare initial assumptions with group discussion results to ensure that discussions are more direct and efficient. The results of FGD will be an important input in the process of determining the best criteria and alternative choices for prioritizing product development that is relevant and aligns with market needs.

2.1.2. TOWS Analysis

TOWS Analysis is a strategic tool that helps organizations identify and leverage the internal and external factors that affect their performance. The TOWS Matrix is used to identify (threats) and (opportunities) from the external environment, as well as (weaknesses) and (strengths) from the internal environment of the organization, and then match these factors to formulate strategies (Resopijani & Neonbeni, 2024; Weihrich, 1982). This analysis helps organizations formulate appropriate strategies by first analyzing external factors and then internal ones (Klau, Fanggidae, Salean, & Fanggidae, 2023). TOWS Analysis is often considered an advanced development of SWOT Analysis with a deeper focus on the relationships between internal and external factors (Asianingsih, Dewi, & Widnyani, 2023). To create a TOWS, use Figure 1, by creating four internal and external factors, and then combining them into four quadrants.

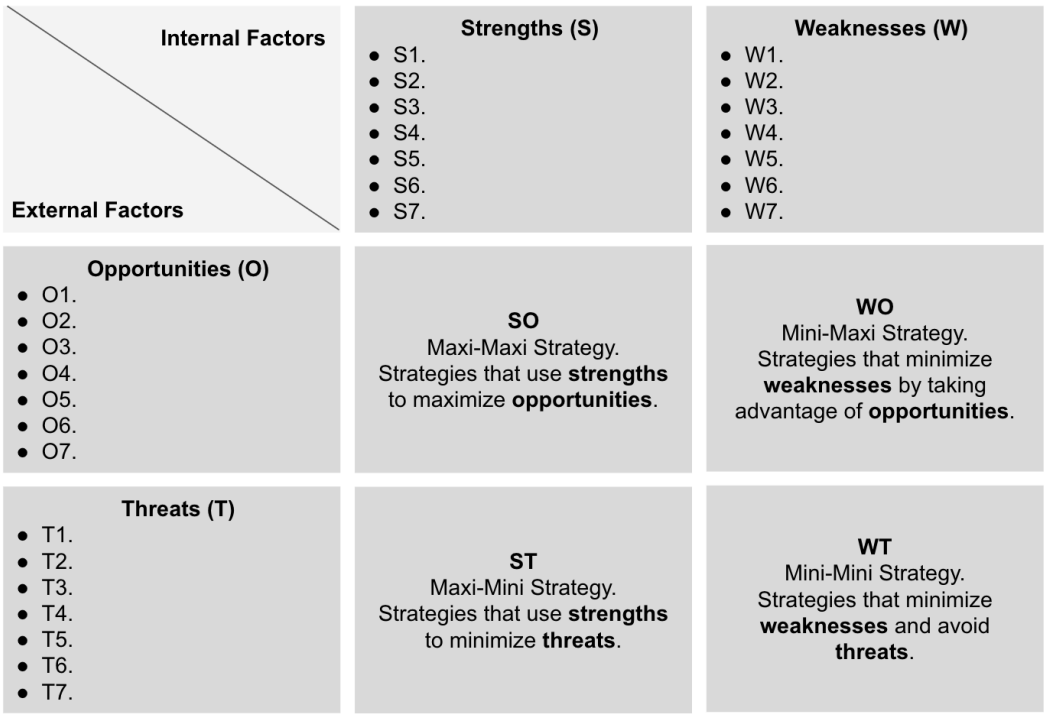

Figure 1. TOWS Analysis Template.
Source: The TOWS Matrix - A Tool for Situational Analysis

In the development of the Zains product, TOWS Analysis was used to formulate appropriate strategies to enhance the relevance and performance of the product in the SaaS market. A combination of these factors can yield a more detailed analysis of actions in product development.

2.1.3. Affinity Diagram

Affinity diagrams are used to categorize ideas or qualitative data into groups based on similar relationships or themes. The Affinity Diagram was first introduced by Jiro Kawakita, a Japanese anthropologist, in the 1960s. This method is also often referred to as the K-J method in honor of its creator's name. This tool is useful in addressing complex problems or finding solutions to specific challenges by grouping various opinions or ideas that arise during brainstorming or group discussion sessions (Brassard & Ritter, 1994).

Steps in creating an Affinity Diagram

1. All relevant ideas, opinions, or qualitative data were collected. This is usually achieved through brainstorming sessions, interviews, or group discussions. Each idea was recorded on a sticky note or digital spreadsheet, such as Excel or Google Sheets, with each idea placed in a separate cell.
2. After all ideas are recorded in the spreadsheet, they are grouped based on themes or relationships that naturally emerge.
3. After all ideas or data are grouped, a title or name that reflects the theme or topic represented by the collection of ideas is assigned to each group. Group names should be short and should reflect the essence of the ideas contained within them.
4. Review the groups created to ensure that all ideas or data have been correctly grouped. If ideas do not fit into any group, create a new group or move them to a more appropriate group.
5. These groups are arranged in a diagram that shows the relationships or hierarchies between them.

The results of the Affinity Diagram will be an important input in the process of determining the criteria, sub-criteria, and best alternative choices for prioritizing the development of Zains products using the AHP method.

2.1.4. Analytical Hierarchy Process (AHP)

The Analytical Hierarchy Process (AHP) method was created by Saaty (2008). AHP helps decision makers in complex situations by breaking down problems into smaller parts, organizing these parts into a hierarchical structure, and conducting evaluations through pairwise comparisons (Saaty & Vargas, 2012). The AHP develops priorities for various alternatives and criteria used in the evaluation. This method is effective in handling decision making involving multiple criteria, both quantitatively and qualitatively (Putri & Utama, 2024).

The AHP algorithm comprises two steps:

1. Assessment of the relative importance of decision criteria.
2. The relative priorities of alternatives are evaluated.

The AHP involves several key steps.

1. We defined the problems and objectives.
   Identify the main goals of the decision that must be made.
2. Structure a hierarchy.
   The hierarchical structure is organized with the goal at the top, followed by the criteria that influence the decision and the alternatives at the bottom. Figure 2 illustrates the structure of the hierarchical diagram.

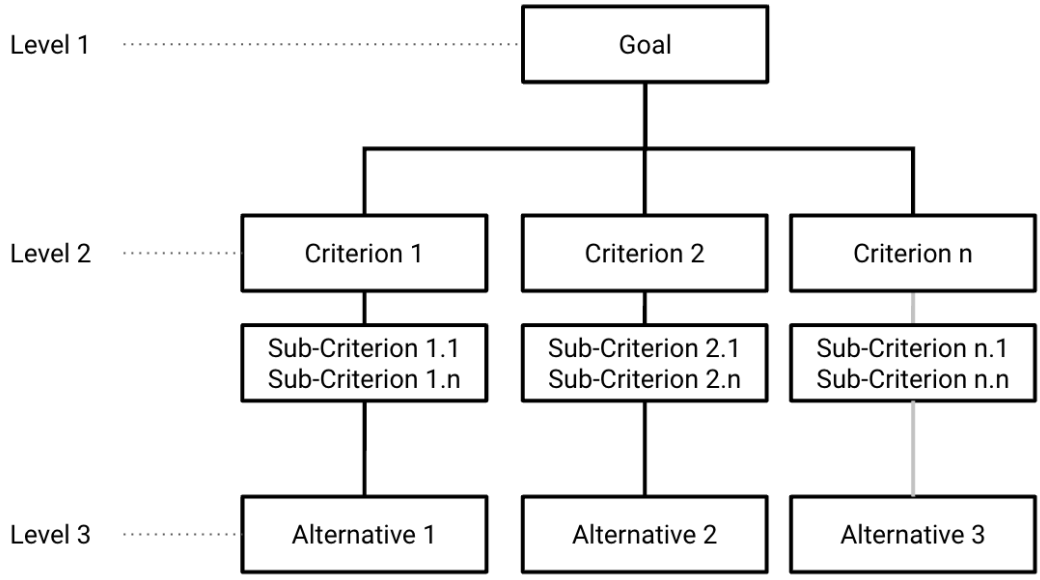

Figure 2. AHP Hierarchical Structure Diagram.
Source: (Saaty & Vargas, 2012)

3. Pairwise Comparisons.

Each element was compared in pairs based on certain criteria to determine its relative priorities.

Table 1. The Fundamental scale of AHP

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak	Experience and judgment slightly favor one activity over another
3	Moderate importance	Experience and judgment strongly favor one activity over another
4	Moderate plus	Experience and judgment strongly favor one activity over another
5	Strong importance	Experience and judgment strongly favor one activity over another
6	Strong plus	Experience and judgment strongly favor one activity over another
7	Very strong or demonstrated importance	An activity is favored very strongly over another; its dominance demonstrated in practice
8	Very, very strong	The evidence favoring one activity over another is of the highest possible order of affirmation
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation

Source: (Saaty & Vargas, 2012)

The scale used in AHP, as shown in Table 1, typically includes values of 1, 3, 5, 7, and 9. Intermediate ratings of 2, 4, 6, and 8 are also permissible. When it is difficult to determine whether one criterion (or alternative) is moderately or very strongly more important than another, a rating of 4 (moderately to very strongly more important) can be used.

Table 2. Pairwise Comparison Matrix.

Criterion 1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Criterion 2
Criterion 1																		Criterion 2
Criterion 1																		Criterion 3
Criterion 2																		Criterion 3

Table 2 is an example table with three criteria used to compare each criterion in determining their relative weights. This table helps in making decisions by assessing the relative importance of the different criteria. The middle scale serves as a neutral point; if the value moves from 1 to a higher column, the importance level increases.

4. Calculate weighting.

A pairwise comparison matrix was used to determine the relative weights of each element in the hierarchy. The synthesis procedure involved the following steps:

1. Step1: Sum The values in each column are summed.
2. Step2: Divide each element of matrix by its respective column total.
3. Step3: Calculate The average of the elements in each row is calculated.

2.1.5. Enterprise Resource Planning

ERP is a commercial software package that supports business processes in real time through the integration of data and business processes across an organization (Davenport, 1998). ERP systems provide modules that support functions such as finance, human resources, production, and supply chain management, enabling organizations to respond quickly and accurately to market changes.

Figure 3 illustrates the process of interconnecting modules within an ERP, both directly and indirectly, used to integrate all input processes into the final result in the General Ledger (GL), which is located in the accounting module. For example, in the employee (Human Resource) module, activities such as leave, permissions, and overtime will affect the accounting module by increasing financial activities that impact employee salary expenditures.

AI in the Finance Module

Artificial Intelligence (AI) is a field of computer science dedicated to developing systems that can perform tasks that typically require human intelligence, such as voice recognition, decision-making, and language translation. AI can also be defined as the study of agents who receive perceptions from the environment and take actions to maximize their chances of success in achieving goals (Russell & Norvig, 2016).

Automation is the primary driver behind the use of AI in the ERP finance module. Traditional manual financial processes, such as data entry, reporting, data collection, and verification, are time-consuming, costly, and prone to errors. Integrating AI into ERP systems can reduce errors by up to 36% and accelerate financial book closures by up to 3.5 days (Oracle, n.d.). With data integrated from various functions and departments into a single ERP system, AI can identify talent shortages, predict payroll costs, and identify the most profitable business areas.

2.1.6. Product Development Roadmap

A product development roadmap is a strategic visual guide that details the vision, direction, priorities, and progress of product initiatives over a specified period. Its purpose is to communicate the product development plan to all stakeholders, including the development team, senior management, and customers. This roadmap includes key elements to be developed, such as long-term goals, milestones, and product features (Pichler, 2022). The main objective of the product development roadmap is to ensure that all parties involved have a clear and consistent understanding of the development direction and priorities.

There are several methods to develop a product roadmap. The top-down approach starts with the company's vision and strategy and then breaks it down into more detailed features and initiatives. This approach ensures that all product development activities align with the company's strategic goals (Gorchels, 2000). On the other hand, the bottom-up approach begins with the needs and feedback from customers and the development team and then combines them into a larger plan, ensuring that the roadmap reflects the actual needs of product users (Cooper, Edgett, & Kleinschmidt, 2001). A combination of both approaches, or a hybrid approach, integrates strategic vision with field feedback to create a comprehensive and realistic roadmap (Pichler, 2022).

By understanding the concepts and elements of the product development roadmap, CNT can be used to better plan the development of strains. Using the AHP approach to determine the priority of the features to be developed will help address the challenges faced and ensure that product development remains relevant and competitive in the ever-evolving SaaS market.

2.1.7. Previous Research

Various studies have discussed the use of AHP in software development, and the results have shown that this method can effectively determine priorities and identify key factors influencing success. Three major studies were relevant to the topic of this research. The first study by Octavianus and Mursanto (2018), titled 'The Analysis of Critical Success Factor Ranking for Software Development and Implementation Project Using AHP, ' examined the factors affecting the success of software development and implementation projects at Verint. Octavianus discovered that the most significant factor for project success was "skilled staff," categorized under management attitude. This study used the AHP method to identify and prioritize critical factors that require attention to enhance project success. This research is highly relevant to the development of Zains because it highlights the importance of staff skills in software project management.

The second study by Khan, Parveen, and Sadiq (2014) titled 'A Method for the Selection of Software Development Life Cycle Models using Analytic Hierarchy Process' focused on selecting the most appropriate software development life cycle (SDLC) model to meet project requirements using AHP. In their study, they identified various SDLC models such as agile, rapid application development (RAD), and traditional methods. They also evaluated these models based on criteria, such as requirement clarity, cost, development time, and system complexity. This study demonstrated that AHP

is effective in making systematic and thorough decisions to choose an appropriate software development methodology. This method can be applied to the development of strains to determine the most market-relevant feature priorities.

The third research by Abusaeed, Khan, and Mashkoor (2023) titled 'A Fuzzy AHP-based Approach for Prioritization of Cost Overhead Factors in Agile Software Development, ' investigated the elements influencing cost estimation in software development within an Agile framework. This study applied a fuzzy AHP method to pinpoint and rank the factors impacting cost and effort estimation in software development projects. The results highlight the significance of aspects such as developer experience, team size, and technical complexity in estimating project costs. These findings support the objective of this study to assess the operational efficiency and stability of these strains.

The main distinction between this study and the three preceding studies lies in the emphasis and context of applying the AHP to software development. Octavianus and Mursanto (2018) focused on general success factors in software development projects, while this study is more specific to developing a product roadmap for SaaS-based ERP Financial Management solutions, namely, Zains. (Khan et al., 2014) focused on selecting SDLC models, while this study emphasizes feature prioritization and product development to maintain relevance and efficiency in the evolving market. Abusaeed et al. (2023) emphasized cost estimation in Agile software development projects, whereas this study focuses on optimizing product development to improve Zains' performance and profitability. Therefore, this research makes a unique contribution to the context of SaaS product development in the financial sector by employing a more specific and targeted approach.

2.2. Conceptual Framework

Given the business situation faced by CNT, a systematic and structured approach is required to determine the product development priorities. This stagnation is caused by several factors, including an outdated technological framework and inability to meet the evolving needs of the market. Some of the identified issues include product stability, as evidenced by the high frequency of bug fixes and continuously evolving customer needs. Effective strategies are required to address these challenges. Therefore, in this study, the author uses a conceptual framework approach that integrates FGD and TOWS analyses to determine goals, criteria, and alternatives. Subsequently, the AHP method was used to prioritize these alternatives.

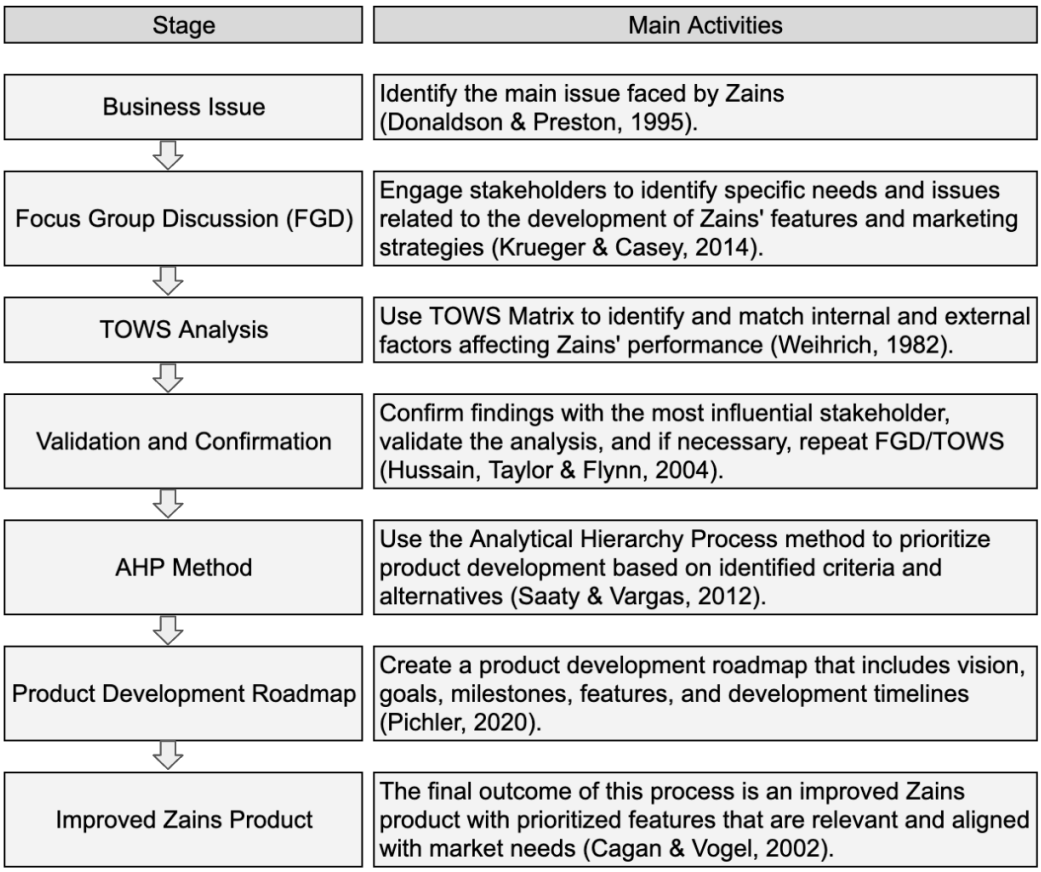

Figure 3. Conceptual Framework.
Source: Author

By adopting the conceptual framework shown in Figure 3, the author aims to provide clear and systematic guidance in determining the priorities for the development of Zains products. The conceptual framework of this study outlines the process of developing the Zains product roadmap, starting with identifying business problems through internal data analysis to understand the challenges faced. Finally, the product roadmap development is carried out by creating a roadmap that includes timelines, milestones, features, and required resources.

3. Research methodology

3.1. Research Design

This study uses a mixed-methods approach, combining elements of qualitative and quantitative methods. This approach was chosen to provide a deeper and more comprehensive understanding of the product development priorities of strains. The qualitative method is used to gather perspectives and insights from stakeholders through Focus Group Discussions (FGD). These FGDs involve internal stakeholders from the Board of Directors (BOD), who are experts in various fields. In-depth discussions will be conducted to explore customer needs and expectations regarding the development of Zains, based on internal helpdesk system data.

The quantitative method is used to collect data through digital surveys, which produce numerical data for statistical analysis. These surveys will identify the values of the criteria, sub-criteria, and priority alternatives for the development of strains based on pairwise comparison matrices. This study explored several qualitative aspects of FGDs, including user needs and expectations for the development of Zains. This includes desired features, expected improvements, and current issues faced by users. Additionally, user experiences with Zains will be understood, including ease of use, reliability, and overall satisfaction, which will help identify areas requiring improvement. The obstacles and challenges

faced by users in using Zains, such as technical issues, customer support, and alignment with their business needs, are also identified.

Insights from internal stakeholders, such as management and development teams, will be explored to gain perspectives on product development, internal priorities, and long-term strategies. The context of the use of Zains in various business and operational environments can also be understood as tailoring product development to be more relevant to different conditions and market needs. User preferences regarding interface design, additional features, and integration with other systems are identified to design a product that better matches user tastes and needs. User views on the strengths and weaknesses of Zains compared to competitor products are explored to provide insights into the product's competitive position in the market.

3.2. Data Collection Methods

The data sources and methods are as follows:

1. Focus Group Discussions
   a) Source: CNT Board of Directors, including the CEO, CTO, CIO, and CBDO.
   b) Method: FGDs will be conducted to discuss the strategic priorities, current challenges, and future development goals of ZAINS. Each session focused on topics relevant to product development, feature enhancements, and market positions. The author guides the discussion as a moderator to ensure that all participants provide their insights. The discussion results were directly recorded by the FGD participants on a digital spreadsheet.
   c) Data Collected: Qualitative data on strategic decisions, stakeholder expectations, technical and operational challenges, and expert opinions on financial management systems and trends.

2. Digital Survey
   a) Source: CNT Board of Directors (BOD) based on expertise.
   b) Method: Questionnaire surveys were used to assign values between 1-9 to the criteria, sub-criteria, and alternatives. These surveys will be conducted at different times after FGD to collect consistent and valid data. AHP-OS (analytical hierarchy process-online system) will be used to ensure the validity of responses by keeping the consistency ratio below 10%. AHP-OS is web-based software that allows users to apply the AHP method to complex decision-making (Goepel, 2018).
   c) Data Collected: Quantitative data in the form of values 1-9 regarding the importance and priority of various criteria, sub-criteria, and alternatives for product development. The larger the comparison value, the more important the variables considered. This survey uses pairwise comparisons to collect data for AHP.

3. Topic FGD

Based on these topics, the author guides FGD participants to have a long-term view of future developments to aid in strategic planning and ensure that the product can evolve and remain competitive in the future (Christensen, 2015).

Table 3. Topic FGD

Topic	Sub Topic	Explanation
Vision and Goals	What are the main vision and goals of ZAINS development?	This question is crucial to understand the strategic direction and ultimate goals of ZAINS development.
Challenges and Success Evaluation	* What are the main challenges in developing the FINS SaaS-based product? * How to measure the success of ZAINS in the market?	* This question aims to identify the obstacles or issues that might be faced during development. * This question is important to determine the key metrics or indicators that will be used to assess ZAINS' success.

Decision Making and Feature Evaluation	* What is the decision-making process for developing new features? * What are the criteria for evaluating and prioritizing new feature development?	* Understanding this process is crucial to ensure that the development of new features is based on clear needs and thorough analysis. * Knowing these criteria helps in understanding the important factors in deciding the priority of feature development.
Conflict Management and Stakeholders	* How to handle conflicts or differences of opinion within the team? * Who are the key stakeholders in the decision-making process of ZAINS development?	* This question is asked to understand the approaches used to resolve conflicts, ensuring that the team can work harmoniously and productively. * Identifying the key stakeholders is important for effective communication and coordination in decision-making.
User Feedback and Innovation	* How to integrate feedback from end-users into product development? * What are the main areas for improvement or innovation in ZAINS?	* This question is crucial to ensure that user feedback is considered in product development to meet user needs and expectations. * Identifying these areas helps focus on developing aspects that will provide the most value to users.
Future Development	What is the future development of ZAINS in the next 5 years?	This question aims to gain insights into the long-term vision and strategic plans to ensure ZAINS remains relevant and competitive.

3.2.1. Participant Profile

The author chose all BOD members to participate in obtaining a comprehensive picture of various areas of expertise. The participants listed in Table 3 were highly skilled in their respective fields. They not only have strategic capabilities, but also technical skills in application technology.

Table 4. Participant Profile.

Participant	Position	Expertise
Denny Awaludinnur	CEO (Chief Executive Officer)	Responsible for overall company strategy and decision-making, leading the company towards achieving its mission and vision, overseeing all operations and resources.
Hikmah Fitriani	CIO (Chief Innovation Officer)	Focuses on innovation and technological advancement, identifying and implementing new technologies, driving company growth through innovative strategies.
M. Irvan Adrian	CTO (Chief Technology Officer)	Oversees the technological development and IT strategy of the company, ensures the technical infrastructure is robust, secure, and aligned with business objectives.
Asep Saepul Rohman	CBDO (Chief Business Development Officer)	Develops and implements business strategies to drive growth, identifies new business opportunities, builds relationships with partners and stakeholders.

3.3. Data Analysis Method

3.3.1. Qualitative Data Analysis

For qualitative data obtained from Focus Group Discussions (FGD), the Affinity Diagram was selected. This method is appropriate because it allows the grouping of ideas or qualitative data into clusters that share the same relationship or theme. In this FGD, the author did not record the discussion in audio or video format, but directly transcribed the main points using Google Spreadsheet in predefined columns.

Each user's activity log will be visible based on the time of changes, ensuring the transparency and traceability of each participant's contribution.

Steps of analysis with an Affinity Diagram
1. Direct Transcription: The main points from the FGD are transcribed directly by participants into Google spreadsheets.
2. Familiarization: Reading the data on Google Spreadsheet repeatedly to understand the content as a whole.
3. Grouping: Similar ideas or data are grouped into categories that have the same theme or relationship. This is performed to form clusters that reflect the main ideas.
4. Naming Categories: Giving titles or names to each group that reflect the theme or topic represented by the collection of ideas. Group names should be short and should reflect the essence of the collection of ideas contained within them.
5. Creating an affinity diagram: The clusters are arranged into a diagram showing the relationship between groups of criteria, sub-criteria, and alternatives.
6. Validation: The clusters were reviewed to ensure that all the data were grouped correctly. If there are data that do not fit any group, create a new group or move it to a more appropriate cluster.

3.3.2. Quantitative Data Analysis

For quantitative data collected through digital surveys, the Analytical Hierarchy Process (AHP) method was used via the AHP-OS. The AHP method provides a better understanding of complex decision problems by forcing users to structure problems hierarchically, consider decision criteria, and choose the most significant ones. Pairwise comparisons help identify logical inconsistencies, whereas subjective opinions are converted into measurable numerical relationships. AHP supports more rational, transparent, and easily understood decision-making with a mathematical basis on eigenvalue and eigenvector solutions to produce ratio scales and measure consistency.

Steps of the Analytical Hierarchy Process
1. Hierarchy Structure: Structuring the problem into a hierarchy with the goal at the top, criteria and sub-criteria at intermediate levels, and alternatives at the bottom.
2. Pairwise Comparison: Performing pairwise comparisons of criteria, sub-criteria, and alternatives to assess their relative importance. This involves assigning values to each element on a scale of 1 to 9.
3. Priority calculation: Calculate the relative weights of each criterion and sub-criterion using the eigenvalue method. This process produces a set of priority vectors that represent the importance of each element.
4. Consistency testing: Consistency testing was performed using the AHP calculator in the AHP-online application. If the consistency ratio (CR) is > 0.1, the application recommends adjustments to bring the CR below 0.1.
5. Synthesis of Results: Combining the weights of criteria and evaluation of alternatives to determine the overall priority of each alternative. This helps in identifying the most important features and development areas, resulting in the final selection of the best alternative for product development.

4. Results and discussions

4.1. Analysis

4.1.1. Summary of Findings from FGD

The FGD was conducted with the key stakeholders in the CNT. This group discussion aimed to gain deep insight into the vision, challenges, and strategies for the development of Zains. The FGD was divided into six main topics, ten subtopics, and four respondents and was held on February 22, 2024, at the CNT office. This summary was obtained from the electronic conversation log translated by Google Spreadsheet. The main points identified from the FGD are as follows:
1. Vision and Goals for the Development of Zains.
   a) CEO: Zains was developed to help Zakat Institutions & NGOs accelerate the adoption of technology in zakat management and facilitate donor management, transactions, and financial reporting.

b) CIO: The development of Zains aims to provide maximum value to users and companies to win industry competition through continuous innovation. It also serves as a solution to respond to the market during a sales decline and to maintain competitiveness with competitors.
c) CTO: Automation and digitization of financial reports for Zakat Institutions and NGOs.
d) CBDO: Zains is an integrated Zakat, Infaq, and Sedekah application from donation receipt processes, donor services, donation distribution, to financial reports according to PSAK 109 standards. The development goal is to quickly and efficiently provide ease in financial reporting.

2. Main challenges in developing a Finance Module (FINS) SaaS-based product.
   a) CEO: Compliance with PSAK.
   b) CIO: Accommodating different user needs, obtaining recognition from certified institutions such as data security and server reliability, integration with the latest technologies like AI.
   c) CTO: Adjusting to different internal customer business processes, the emergence of competitors with competitive quality and prices, and adapting to the latest technological developments.
   d) CBDO: Lack of system analysts and programmers not focusing on product development by providing training and necessary tools for the integration of the latest technologies, such as AI.

3. Measuring Zains' success in the market
   a) CEO: number of Zain subscribers.
   b) CIO: Increase in users, positive client testimonials, high retention, increased customer referrals.
   c) CTO: Achieving the target number of subscribing customers.
   d) CBDO: High subscription rates, system-generated reports, continuous institutional growth, fewer human resources, but increased achievements.

4. Decision-making process and feature evaluation
   a) CEO: Based on customer needs with the highest number of requests analyzed to decide whether to develop.
   b) CIO: Based on client requests (customs). Development must be based on a strategic analysis of both long- and short-term plans.
   c) CTO: Identify the most impactful customer issue.
   d) CBDO: Identify problems and analyze the feasibility of feature development.

5. Criteria for evaluating and prioritizing new feature development
   a) CEO: Features with a significant impact on zakat management processes.
   b) CIO: Provides financial benefits for the company, technological advancements, changes in user preferences, and availability of internal CNT resources.
   c) CTO: Impact of features on financial and time efficiency.
   d) CBDO: Speed of production processes, business process effectiveness and efficiency, impact of new features on the institution, HR efficiency.

6. handling conflicts or differences of opinion within the team
   a) CEO: Brainstorming.
   b) CIO: Comprehensive evaluation of each feature, analysis of customer voice, analysis of current technology, analysis of company conditions, and agreement on development priorities.
   c) CTO: Coordination and deliberation to reach consensus and commitment.
   d) CBDO: Discussion and deliberation to reach a consensus, evaluation of data and facts, consultation with relevant parties or superiors, and focus on common goals.

7. Key stakeholders in Zains' development decision-making
   a) CEO: Account Manager (sales), Service Desk, and Development team.
   b) CIO: Sales team, Product/Business Development, Service team, C level.
   c) CTO: Account Manager (sales), Service Desk, and Development team.
   d) CBDO: Sales, Service, Implementer, Developer.

8. Integrating end-user feedback into product development
   a) CEO: Feedback collected through the Service Desk team and the Account Manager.
   b) CIO: User testing before product launch, involving users in the ideating and prototyping processes, collecting user feedback through interviews and sampling.
   c) CTO: Identifying tickets in the Service Desk and follow-up by the development team for recurring cases.
   d) CBDO: Identifying tickets, surveys, questionnaires, and client interviews.

9. Key areas for improvement or innovation in Zains
   a) CEO: Speed of onboarding, CRM development, and program modules.
   b) CIO: Becoming SaaS with an ERP concept, modules such as Asset/Inventory Management, CRM, HRM, Distribution, and Document, rebranding ZAINS, and dedicated customer channels.
   c) CTO: CRM development, asset feature development, and synchronization of multiplatform crowdfunding.
   d) CBDO: Development of budgeting and asset features, program feature development, CRM feature development, and crowdfunding system development.

10. Future development of Zains in the next 5 years
   a) CEO: With the growing potential of zakat in Indonesia, technology is needed to maximize zakat potential.
   b) CIO: Optimistic: ZAINS can compete with competitors and enter the SME segment.
   c) CTO: Rapid development of information technology. ZAINS must meet the challenges and needs of customers.
   d) CBDO: Technological innovation, functionality enhancement, reliable collaboration, and partnership.

4.1.2. TOWS Analysis

To obtain a more detailed picture of the product development roadmap, the researcher analyzed the FGD results translated into TOWS analysis. TOWS analysis helps identify internal and external factors affecting product development and formulates appropriate strategies based on the combination of strengths, weaknesses, opportunities, and threats.

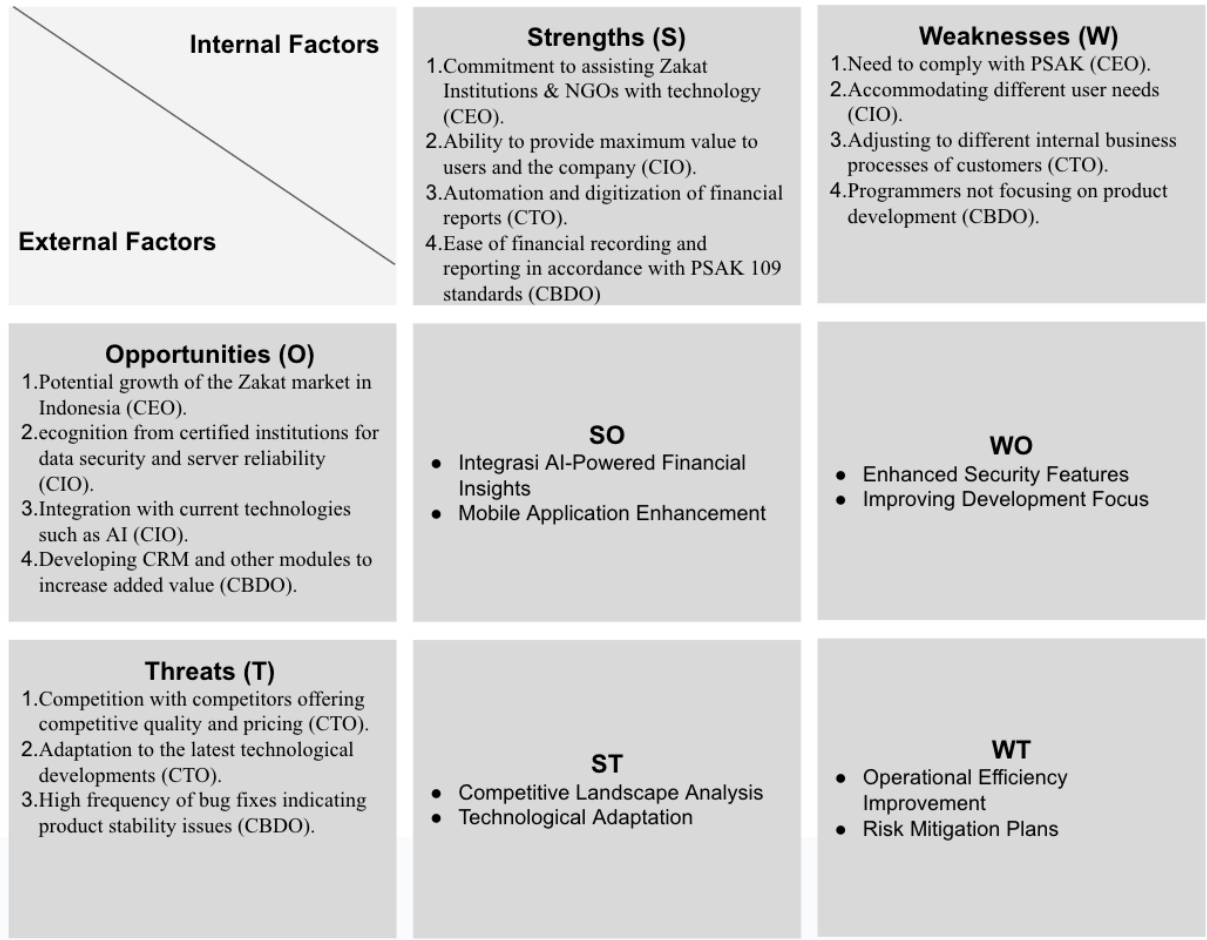

Figure 4. TOWS Matrix Analysis from FGD
Source: Processed by Author from FGD

Based on the TOWS Matrix in figure 4, Zains can leverage its strengths and opportunities by integrating AI-powered financial insights and improving its mobile applications to support NGOs. To overcome its weaknesses while taking advantage of opportunities, Zains aims to develop enhanced security features and increase the development focus through training in new technologies such as AI. To overcome these threats, the company plans to conduct a competitive landscape analysis and adapt to the latest technological advances. In addition, strains must improve operational efficiency and create risk-mitigation plans to ensure product stability and competitiveness.

4.1.3. AHP Analysis

The researcher used the Analytical Hierarchy Process (AHP) method to evaluate and determine priorities in the development of Zains products. AHP data processing was conducted using AHP-OS because it facilitates pairwise comparisons, weight calculations, and consistency evaluations with an easy-to-use interface, thus speeding up the analysis process and improving the reliability of the results in real time. The results from the AHP-OS are divided into three discussions.

1. Pairwise Comparison Model

As shown in Figure 4, the pairwise comparison model in AHP-OS works by comparing two criteria (e.g., Market Demand vs. Financial Impact) to determine which is more important, using a scale of to 1-9 to indicate the level of importance. This is also performed for sub-criteria comparisons. The outcomes of these comparisons were used to calculate the weight of each criterion in the AHP analysis to establish development priorities. The consistency of the assessments was evaluated using the Consistency Ratio (CR), which must be below 0.1 to be deemed consistent. Respondents can use the Calculate feature to determine the CR; if the CR is above 0.1, the AHP Calculator provides recommendations for improvement.

The pairwise comparison interface for alternatives works in the same way as it does for criteria or sub criteria. In the comparison of alternatives, respondents can also use the calculate feature to check the CR.

2. Analysis of Criteria

Table 5. Consolidate Priorities of Criteria (CR: 0.5%)

No	Criteria	Priority	Rank
1	Market Demand	8.60%	5
2	Financial Impact	37.80%	1
3	Technological Relevance	16.60%	4
4	Operational Efficiency	20.10%	2
5	Compliance and Security	16.80%	3

Source: Result from AHP-OS

Table 5 shows that Financial Impact is the main criterion for Zains because the financial aspect is very important for the sustainability of the product. A weight of 37.80% indicated that the ability to increase revenue and reduce costs is crucial. Focusing on the financial impact helps ensure that innovations and product improvements support business goals and provide tangible benefits for users and investors.

Table 6. Group Result and priorities of individual participants

Participant	Market Demand	Financial Impact	Technological Relevance	Operational Efficiency	Compliance and Security	CRmax
Group result	8.60%	37.80%	16.60%	20.10%	16.80%	0.50%
CBDO	4.60%	4.30%	19.80%	30.20%	41.00%	3.10%
CIO	11.90%	61.80%	5.20%	3.30%	17.80%	9.20%
CEO	4.90%	53.50%	13.70%	23.40%	4.50%	4.00%
CTO	6.40%	46.60%	17.20%	22.90%	6.80%	5.70%

Table 6 shows that almost all stakeholders consider Financial Impact to be very important, with the CEO giving it the highest priority at 53.50%. This is because focusing on increasing revenue and reducing costs supports company growth. On the other hand, CBDO emphasizes the importance of Compliance and Security with a priority of 41.00%, as regulatory compliance and data protection are crucial for maintaining customer trust.

3. Analysis of Sub-criteria.

Table 7. Consolidate Priorities of Sub-criteria

Criteria	Sub-criteria	Global Priority
Market Demand 0.086	Customer requests and needs 0.499	4.30%
	Competitive landscape 0.337	2.90%
	User experience 0.164	1.40%
Financial Impact 0.378	Revenue potential 0.709	26.80%
	Cost savings 0.291	11.00%
Technological Relevance 0.166	Compatibility with current technologies 0.426	7.10%
	Future-proofing 0.338	5.60%
	Ease of integration with other systems 0.236	3.90%
Operational Efficiency 0.201	Streamlining internal processes 0.239	4.80%
	Reducing maintenance and bug fixing 0.323	6.50%
	Ability to scale with customer growth 0.438	8.80%
Compliance and Security 0.168	Compliance with regulatory standards 0.474	8.00%
	Data protection and security features 0.345	5.80%
	Recognition from certified institutions 0.181	3.00%

Source: Result from AHP-OS

Table 7 depicts the mapping of the sub-criteria based on global priorities, showing the importance order of each sub-criterion within the AHP analysis framework. For Market Demand criteria, the largest sub-criteria were related to customer requests and needs (4.30%). This means that CNT need to understand customer needs, resolve various issues, and prioritize a better interface. Financial Impact is the highest criterion, with a weight of 37.80%, particularly related to the potential for revenue increase (26.80%). From the Technological Relevance perspective, strains must be able to adapt to the latest technologies, such as AI technology, with current technology compatibility having the highest weight (7.10%). In terms of operational efficiency, strains must be able to handle customer growth, with the ability to scale, with customer growth being the largest sub-criterion (8.80%). In the Compliance and Security section, Zains must also present features that comply with applicable regulatory standards, with compliance with regulatory standards being the highest sub-criteria (8.00%).

4.2. Business Solution

To address the product development issues of Zains at CNT, previous data analysis has identified three alternative solutions for the development of Zains products.

Table 8. Consolidate Priorities of alternatives

Sub-criteria	Global Priority	Mobile Application Enhancement	AI-Powered Financial Insights	Enhanced Security Features
Customer requests and needs 0.499	4.30%	0.17	0.578	0.252
Competitive landscape 0.337	2.90%	0.333	0.394	0.272
User experience 0.164	1.40%	0.489	0.336	0.175
Revenue potential 0.709	26.80%	0.24	0.444	0.316
Cost savings 0.291	11.00%	0.336	0.417	0.247
Compatibility with current technologies 0.426	7.10%	0.208	0.535	0.257
Future-proofing 0.338	5.60%	0.159	0.579	0.262
Ease of integration with other systems 0.236	3.90%	0.295	0.479	0.226
Streamlining internal processes 0.239	4.80%	0.211	0.525	0.264
Reducing maintenance and bug fixing 0.323	6.50%	0.228	0.275	0.497
Ability to scale with customer growth 0.438	8.80%	0.33	0.281	0.389
Compliance with regulatory standards 0.474	8.00%	0.162	0.378	0.46
Data protection and security features 0.345	5.80%	0.167	0.404	0.429
Recognition from certified institutions 0.181	3.00%	0.174	0.454	0.372
Resume:	1	24.20%	43.00%	32.70%

Source: Result from AHP-OS

Table 8 shows the global priorities for the three Zains development alternatives based on the predetermined sub-criteria. AI-Powered Financial Insights have the highest priority at 43.00%, indicating that the integration of AI in financial analysis is the top priority. Participants viewed this development as one that generates potential revenue.

The following are the prioritized alternative product development solutions based on AHP-OS calculations:

1. AI-Powered Financial Insights.

The integration of AI into financial analysis has become a top priority. AI can provide deeper and faster financial analysis, automate tasks that usually require time and human effort, and offer more accurate insights for strategic decision-making. This solution is implemented as follows.

a. Improve efficiency: Automating financial analysis reduces human errors and speeds up the financial reporting process.
b. Adding competitive value: This feature provides a competitive advantage by offering more advanced services compared to competitors.

2. Enhanced Security Features

Regulatory compliance and data protection have become major focuses. Enhanced security features are not only important to protect user information but also to maintain the trust and reputation of Zains in the market. This solution includes:

a. Implementation of the latest security technologies: Adopting the latest technologies to protect data from threats and breaches.
b. Increasing customer trust: Strong security features enhance customer trust and recognition from certified institutions.

3. Mobile Application Enhancement.

Enhancement of mobile applications is prioritized to provide ease of access and use for customers through a more intuitive and responsive mobile application. The main benefits of this solution are as follows:

a. Improving user experience: A better mobile application enhances user engagement and satisfaction.
b. Attracting more users: With better features, a mobile application can attract more new users and retain existing ones.

4.2.1. Implementation Plan & Justification

4.2.1.1. Implementation Plan

The implementation plan included three main alternatives for the development of Zains SaaS. These alternatives are prioritized based on their impact on market demand, financial benefits, technological relevance, operational efficiency, compliance, and security. The implementation schedule covers August–December 2024, as listed in Table 9. The detailed schedules to ensure efficient resource allocation and good project management are as follows:

Table 9. Development Plan of Zains

Period	Development Priority	Details
August - September 2024	Mobile Application Enhancement	* Develop and test new features for the mobile application. * Focus on user interface improvements and responsiveness. * Conduct user acceptance testing and gather feedback.
October - November 2024	AI-Powered Financial Insights	* Integrate AI modules for financial analysis and insights. * Ensure compatibility with existing systems and data structures. * Train the system using historical financial data. * Conduct validation and testing with a subset of users.
December 2024	Enhanced Security Features	* Implement advanced security protocols and compliance measures. * Integrate features such as multi*factor authentication and data encryption. * Perform security audits and vulnerability assessments. * Finalize documentation and provide training to users on new security features.

Source: Author

4.2.1.2. Justification

The proposed implementation plan has not yet been fully reviewed and approved by relevant stakeholders, including the CEO, CIO, CTO, and CBDO of CNT. This plan aligns with the company's strategic goals and addresses the key challenges identified during the FGD. An iterative approach ensures that continuous feedback is integrated and the project remains aligned with user needs and market trends.

5. Conclusion

5.1. Conclusion

The analysis and interpretation presented in Chapter IV provides a comprehensive understanding of the current challenges and strategic priorities for the development of SaaS. The Analytical Hierarchy Process (AHP) reveals that Financial Impact is the most critical criterion for prioritizing product development, emphasizing the importance of revenue potential and cost savings in decision-making. Among the evaluated alternatives, AI-Powered Financial Insights emerged as the top priority, highlighting their role in enhancing efficiency and competitiveness through advanced financial analysis automation.

The identified operational challenges include the need for enhanced security features and user-friendly mobile device applications. Enhanced security is crucial for regulatory compliance and data protection, whereas improvements to mobile applications are necessary to meet user demands and increase engagement. Insights from the Focus Group Discussion (FGD) emphasize the importance of aligning product development with strategic goals, technological advancements, and customer needs, reflecting the diverse perspectives of stakeholders, including the CEO, CIO, CTO, and CBDO. A comprehensive implementation plan is proposed, focusing on prioritized alternatives and setting specific schedules and resource allocations to ensure efficient project management and alignment with organizational goals. This strategic approach aims to address the identified challenges and leverage opportunities for the future development of Zains.

5.2. Recommendation

The recommendations of this study are as follows.

1. CNT should use an Analytical Hierarchy Process (AHP) to make measured and consistent decisions.
2. The evaluation parameters for the ERP financial module include market demand, financial impact, technological relevance, operational efficiency, compliance, and security.
3. CNT should increase the participation of experts from various fields in FGDs and surveys to enrich the evaluation of alternatives.
4. An affinity diagram is used in brainstorming sessions to align the team's understanding of ideas and issues.
5. Apply TOWS Analysis to product development strategies by mapping strengths, weaknesses, opportunities, and threats.
6. Conduct continuous evaluation and integrate user feedback through surveys, interviews, and data analyses.
7. The development priorities for Zains based on AHP are the integration of AI for financial analysis, the enhancement of security features, and the improvement of mobile applications.
8. Create and implement a clear product development roadmap including vision, objectives, milestones, features, and resource allocation.

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