GOLDEN RATIO OF MAPPING IDEA AND LITERATURE FORMAT
VOLUME 5, ISSUE. 1 (2025)
Website: https://goldenratio.id/index.php/grmilf

GOLDEN RATIO
ISSN [Online]: 2776-6381

MAPPING IDEA & LITERATURE FORMAT | RESEARCH ARTICLE

Analysis of Implementation of Fugel Models of Innovation at BKI Academy

Dandy Rukmana[1], Retno Kusumastuti Hardjono[2]

[1,2] Department of Innovation and Intrapreneurship, Faculty of Administration Science, Universitas Indonesia, Depok, Indonesia. Email: dandy.rukmana@ui.ac.id1, r.kusumastuti@ui.ac.id[2]

ARTICLE HISTORY

Received: March 15, 2025
Revised: June 09, 2025
Accepted: June 29, 2025

DOI
https://doi.org/10.52970/grmilf.v5i2.1469

ABSTRACT
Successful innovation in today's business world requires an integrated approach, encompassing aspects of corporate design, product design, and the application of new technologies. Effective collaboration and targeted design management are key to achieving successful innovation. Utilizing efficient knowledge management techniques and tools in integrated design efforts is also important. Proactive planning is critical in innovation, where companies must integrate market trends, competition, emerging technologies, and changing customer preferences. Companies should not just wait for innovation to come by chance, but instead plan proactively and create an environment that encourages innovative thinking. The emergence of BKI Academy as a relatively new organization poses a significant challenge. The concept of BKI Academy itself as a provider of training and MICE services in the Maritime, K-3, Energy, Testing, Inspection & Certification, Construction, Management Systems and Human Resources market categories for all industries related to a unique value proposition for professionals and students in Indonesia, because maritime education/training institutions in Indonesia are minimal, BKI Academy sees this as a very appropriate opportunity. It is beneficial for the needs of workers in the maritime world. The innovation process plays a role in the development of companies or institutions. In an era where the flow of information and communication is growing rapidly, consumers are increasingly savvy in choosing products and services. Therefore, BKI Academy and similar organizations must continue to innovate and adapt to the times to meet customer needs and ensure the continuity of their business in an increasingly competitive market. The data collection technique used is the documentation technique. The data analysis design used is descriptive analysis. This study will provide an in-depth overview of how innovation models are applied at BKI Academy and how they impact the organization's progress. It will also provide the best recommendations for maritime educational institutions in building entrepreneurship-based education.

Keywords: Innovation, Fugel Model, BKI Academy.

I. Introduction

With more than 50 years of experience and an increasing number of services in our units and branches in the classification and commercial sectors, and one of the state-owned companies with a broad business portfolio in the maritime, offshore, energy, and industry segments, we are PT. Biro Klasifikasi Indonesia (BKI) strives to utilize the best resources and applied experience we have ever had to help our stakeholders develop their team member competencies. We strongly believe that investing in team member

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competency development allows a company to realize its vision and mission in a more focused and measurable way. Competencies built on knowledge and practical experience will lead to greater personnel and company success. Based on this, PT. Biro Klasifikasi Indonesia (BKI) presents and offers personnel competency development solutions through a comprehensive training program through a training provider unit called BKI Academy. BKI Academy is a training and MICE service provider in the market categories of Maritime, K-3, Energy, Testing, Inspection & Certification, Construction, Management System, and Human Resources for all Industries related to a unique value proposition for professionals and Students in Indonesia. This institution has a mission to ensure that participants achieve qualifications at the right time and receive quality services that result in a positive learning experience, and create a common understanding so that in the survey and inspection process, there are no different interpretations and updates on regulatory developments to stakeholders.

Education and training (diklat) is a learning process in an organization that leads to changes in team member attitudes and behavior in meeting job qualification expectations and demands for organizational development, both internally and externally. Training, in theory, is an effort to develop human resources, especially to improve professionalism in terms of administrative and management skills (leadership). Sedarmayanti in Hanum (2018) argues that the most important education and training are needed to improve the quality of abilities related to work skills, thinking, and skills. Devi & Shaik in Julifan (2015) state that training allows human resources to bring out their potential. An in-depth training program acts as a tool to improve team member' skills and enable them to do their jobs better. Training and development are essential for employees, organizations, and organizational effectiveness.

The success of implementing training is determined by many factors, including determining objectives, developing curriculum, compiling programs, determining participants, organizing administration and finance, the learning process, and the environment. Therefore, training institutions must demonstrate professionalism as training organizers and create reliable and professional teachers (Hanum, 2018). Training is designed to facilitate the participants' learning process to develop the knowledge, skills, and attitudes needed in the workplace. The effectiveness of training implementation will be a significant input (feedback) in improving the quality of training and maintaining the sustainability of the training organizing agency/institution. Observing the existing opportunities, BKI Academy must take quick steps in utilizing opportunities in training institutions by creating a concept related to courage, creativity, and innovation to create new things to gain profit by becoming the first maritime school in Indonesia. The relationship between entrepreneurship and innovation is close and mutually influential. Both are key in the business world and economic development. Innovation is the process of creating or adopting something new or better, while entrepreneurship is the ability to identify, develop, and manage business opportunities. From the explanation above, the author is interested in writing a scientific study entitled Analysis of the Implementation of Fugel Models of Innovation " at the BKI Academy.

II. Literature Review and Hypothesis Development

2.1. Understanding Innovation

Innovation is how creativity, ingenuity, and strong initiative can produce discoveries much better than previous ones. Therefore, one of the goals of innovation is to create new comfort in human life through discoveries or developments of innovative ideas that are successfully implemented. Innovation is an effort to renew existing resources and become an update of previous resources. These resources can affect nature, energy, economy, jobs, use of technology, and more. Innovation is renewing various resources to be more useful for humans. Innovation is driven by technology, which facilitates the creation of various new products /services. Innovation is closely related to cultural renewal, especially in technology and economic use. The innovation process is closely related to discoveries in technology and inventions. Discoveries can be interpreted as discovering new elements by individuals or groups, for example, in the form of tools or ideas.

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Here are some definitions of Innovation by several experts: Innovation is a process to realize, combine, or mature knowledge/ideas, which are then adapted to obtain new value for a product, process, or service (Luecke, 2003). Innovation is an idea, concept, object, or practice based on and accepted as something new by a person or a particular group to be applied or adopted (Everett M. Rogers, 1983). Innovation is a new idea applied to initiate or renew a product, process, or service (Stephen Robbins, 2015).

2.2. Innovation Process Model

The model discussed on this occasion is the Third Generation Coping Innovation Model.

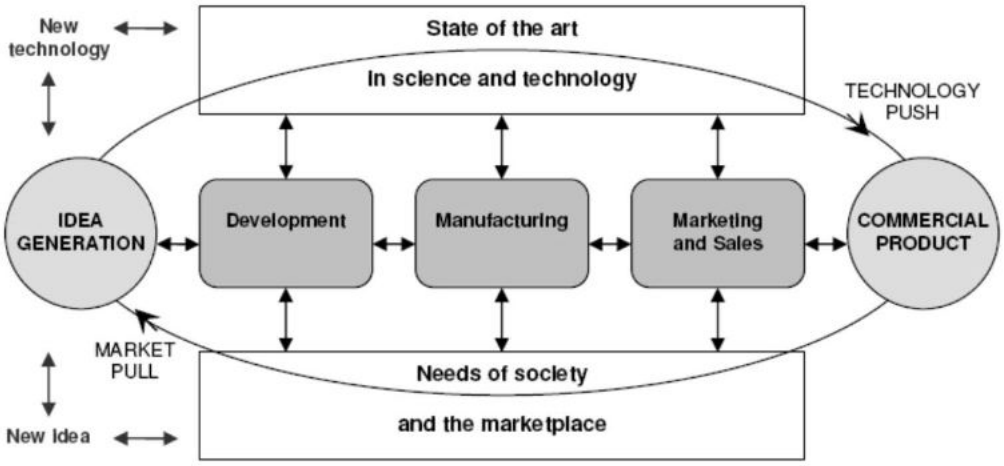

Figure 1. Third Generation Coping Innovation Model

The Third Generation Coping Innovation Model is one of the innovation models that consists of several generations of innovation models. This model is a development of the second generation, namely the integrated model. This model combines technology and market desires. This model also considers external factors such as demographic, economic, and cultural changes. This model also considers internal factors such as the company's ability to produce innovative products and services. In order to adopt the third generation model of coping innovation, individuals and organizations must accept the importance of innovation awareness, creativity, adaptation, and learning as an integral part of their coping process. In doing so, they can be more effective in dealing with challenges and environmental changes.

2.3. Innovation Process Stages

The structured stages of the innovation process are applied at BKI Academy or similar contexts. This process ensures that ideas are systematically developed, evaluated, and refined before implementation and funding. The stages are as follows:

1. Idea Generation / Identification Stage
   Information is gathered, categorized, and presented at this initial stage to stimulate creativity. Ideas are generated and collected from various sources through structured methods, such as workshops, or spontaneously. Capturing and recording ideas ensures that even those not immediately used can be revisited later.
2. Concept Definition Stage
   This stage focuses on developing and refining the generated ideas into practical concepts. It involves

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combining different ideas, incubating them, and improving their viability. The concept is shaped into a clear and documented form that can be communicated across teams for feedback and further enhancement.

3. Feasibility and Concept Refinement Stage
   In this stage, the developed concepts are evaluated for feasibility. This includes determining their practicality, developing models or prototypes, and making necessary refinements. Concepts undergo a filtering process to select those with the highest potential. The final output at this stage is a set of well-developed concepts ready for funding decisions.

Each stage is interconnected through idea and concept filtering points, ensuring that only the most promising innovations advance through the pipeline. The process supports risk management, efficient resource allocation, and the systematic development of innovative solutions aligned with organizational strategy.

2.4. Stage-gate innovation process

Structured model of innovation implementation, divided into three main stages: Application Stage, Refinement & Formalization, and Exploitation.

1. Application Stage
   The process begins with Project Planning, followed by Detail Design & Testing. This initial stage is gated by the "Initiation Gate", ensuring only well-prepared ideas move forward. After passing this gate, the process advances to Implementation. Before a complete application, the idea must pass the "Implementation Gate", which assesses readiness for deployment.
2. Refinement & Formalization Stage
   Once implemented, the idea enters the Operational Phase, where it is Operated, Filtered, and Formalized. This stage focuses on testing in a real-world environment, improving its robustness and practicality. The outcomes are evaluated at the Exploitation Gate, ensuring that only scalable and sustainable innovations proceed.
3. Exploitation Stage
   In the final stage, the innovation is transformed into a Business Model. This stage represents the full Exploitation of the innovation's value and scalability potential. At this point, the innovation is institutionalized and integrated into the organization's operations or offered to the market.

Throughout the process, gates serve as checkpoints to evaluate readiness and quality, enabling iterative feedback and refinement where necessary. The various activities in the Fugel Model's various stages are explained in more detail in the following sub-sections.

2.5. Idea Generation/Identification Stage

It is the creative stage where new ideas are generated or new opportunities are identified. Ideas can come from various internal and external sources, spontaneously or through workshops and brainstorming sessions. In idea farming, the goal is to provide the seeds and fertilizer for new ideas to grow, then collect, refine, and store these ideas for further development. Relevant information, such as business problems, competitors, markets, technologies, and corporate strategies, is important "seed" for stimulating new ideas, and collaborations such as workshops and brainstorming sessions can assist in this process. This stage supports innovation by facilitating the provision of the correct information to the right people in the right

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way. It improves the knowledge supply chain that can be used within the company.

1. Capture Ideas
   It is essential to capture or frame ideas acceptably so they can be communicated and developed into a further concept, whether from spontaneous thinking or generated during a brainstorming session. In addition, capturing ideas is essential to maintain a history of new ideas, as ideas often rejected due to current circumstances may be more viable in the future. In addition, it is important to capture ideas by considering the development life cycle, relevant team members, and external factors. The Idea Capture stage is a critical process in managing innovation, where ideas that emerge, either spontaneously or through a brainstorming session, need to be captured and expressed effectively so that they can be communicated, developed, and recorded for future use. This allows the history of new ideas to be preserved and gives currently rejected ideas a chance to become more relevant. Idea capture should also consider the context of the development cycle, the team members involved, and relevant external factors.
2. Idea Filter
   In the Idea Filter stage, new ideas are selected based on how well they fit the company's strategy. Ideas that do not fit the company's strategy can be rejected. This saves time and resources needed to transform ideas into better concepts and evaluate their feasibility. Therefore, having proper and carefully considered screening standards is very important. However, rejected concepts are captured along with why they were rejected so that they can be studied and developed.

2.6. Concept Definition Stage

It is when ideas are developed into practical and applicable concepts. These concepts often emerge from a combination of several different ideas. After the definition is done and documented, it takes time to share the concept with various parties so that the concept can develop and possibly be improved by bringing them together.

2.7. Feasibility and Concept Refinement Stage

This is the step where the defined concepts are deepened through further investigation, additional information gathering, and the creation of models and prototypes to determine their feasibility. A "fail fast and smart" approach is used, where concept evaluation is an important lesson. Failing at this stage is preferable and more cost-effective than failing at the implementation stage. This concept evaluation often involves iteration and iterative refinement. At the end of this stage, decisions are made to allocate resources to the most promising concepts. The result is a list of innovative projects with good prospects for further development.

2.8. Innovation Portfolio Stage

Involves overall oversight of the company's innovation initiatives. At this stage, the results of the Feasibility and Concept Refinement Stages determine which initiatives should be prioritized, scheduled, and aligned with innovation projects. Innovation portfolio management governs the allocation of resources, assignment of responsibilities, and ongoing monitoring of initiatives to understand their overall impact and ensure achievement of the company's strategic objectives. It also includes making decisions about when specific innovation projects should be initiated. This stage helps ensure that all innovation projects effectively

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support the company's vision and strategy.

2.9. Stage Implementation

Involves the design, implementation, and testing of innovative solutions identified, conceptualized, and decided upon in the previous stage. It includes project planning and project management to design and implement innovative solutions. Once the detailed design is created, the implementation gate is used to conduct a final review before proceeding to the implementation stage. The implementation stage involves the development and launch of the innovation solution.

2.10. Refinement & Formalization Stage

This is the phase where innovations that have been launched begin to be implemented. At first, the innovative solution may not function optimally. This stage involves monitoring, measuring, evaluating, and continuously improving the innovation solution until it performs satisfactorily according to specifications. After the solution performs well, the next step is to document the solution in operational documents.

2.11. Exploitation Stage

The stage is where concepts are formed into usable and real forms. Planning the implementation, development, and testing of the identified innovation solutions is included in this section. The final step is to develop new business models and markets by implementing solutions to generate additional value. Before this stage, an evaluation gate determines which solution is better.

2.12. Creative Destruction and the Role of Entrepreneurs in Innovation

Schumpeter (1934) introduced the concept of creative destruction as a fundamental mechanism in economic development. According to Schumpeter, innovation is not a smooth or incremental process but a disruptive force that reshapes industries, replaces outdated business models, and fosters economic progress. This destruction of existing structures enables the creation of new products, services, or processes that better satisfy market needs. Entrepreneurs are seen as the key agents who drive this process by introducing novel combinations of resources, technologies, and markets. In this context, innovation and entrepreneurship are inseparable, as entrepreneurs are the ones who take risks to commercialize innovations and transform industries (Schumpeter, 1934). The essence of creative destruction is that economic growth stems from the continuous emergence of superior alternatives that render previous methods obsolete. Schumpeter emphasized that without entrepreneurial leadership and vision, the potential of innovation cannot be fully realized. The entrepreneurial role is critical in initiating change and ensuring innovation generates competitive advantage and economic renewal.

2.13. Diffusion of Innovation Theory by Everett Rogers

Everett Rogers (1983) developed the *diffusion of innovation theory*, which explains how innovations are communicated and adopted over time among members of a social system. Rogers identified that the spread of innovation is influenced by the characteristics of the innovation itself, communication channels, time, and the nature of the social system. The process of adoption unfolds through five stages:

1. Knowledge – Individuals become aware of the existence of the innovation and gain an understanding of its functions.
2. Persuasion – Individuals form a favorable or unfavorable attitude towards the innovation based on

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information, subjective norms, and perceived attributes.

3. Decision – The individual decides to adopt or reject the innovation. This decision may change as more information is gathered or social influences shift.
4. Implementation – The innovation is put into use. At this stage, practical issues such as compatibility with existing systems and user support become crucial.
5. Confirmation – The individual seeks reinforcement for the adoption decision and may continue or reverse their adoption based on feedback, experience, and peer influence.

Rogers also categorized adopters into five groups: innovators, early adopters, early majority, late majority, and laggards. Each category reflects different levels of risk tolerance, openness to new ideas, and influence within the social system. This theory provides a valuable lens for understanding how educational institutions, such as BKI Academy, can strategically promote the adoption of innovative programs and practices within their stakeholder communities.

2.14. Open Innovation Model by Chesbrough

Chesbrough (2003) introduced the concept of open innovation, which challenges the traditional view that innovation should be developed and managed entirely within organizational boundaries. Instead, open innovation encourages organizations to collaborate with external partners, such as customers, suppliers, competitors, universities, and research institutions, to co-create value. In the open innovation model, knowledge flows in both directions—internally and externally—facilitating faster and more efficient development of new products, services, or processes. Companies are urged to leverage external ideas and technologies while allowing their internal innovations to be used by others through licensing, joint ventures, or spin-offs. This approach is particularly relevant for organizations operating in dynamic environments, such as maritime training and education, where technological advancements and regulatory requirements evolve rapidly. By adopting open innovation principles, institutions like BKI Academy can enhance their ability to deliver cutting-edge training programs, collaborate on research and development, and stay ahead in competitive markets. Chesbrough argues that open innovation increases the speed and efficiency of innovation processes and helps reduce costs, diversify risk, and improve the alignment of innovation initiatives with market needs. This model promotes partnerships for educational institutions that contribute to curriculum enrichment, applied research, and knowledge exchange, which are crucial for continuous improvement and relevance in a globalized world.

2.15. Balanced Scorecard in Measuring Innovation Success

The Balanced Scorecard, introduced by Kaplan and Norton (1996), provides a comprehensive framework for measuring organizational performance beyond traditional financial metrics. It incorporates multiple perspectives—financial, customer, internal business processes, and learning and growth—allowing organizations to align performance indicators with strategic objectives, including innovation outcomes. In the context of innovation, the Balanced Scorecard helps organizations translate abstract innovation strategies into concrete, measurable actions. Kaplan and Norton argue that focusing solely on financial indicators can overlook critical drivers of long-term value creation, such as innovation capacity, intellectual capital, and customer relationships. Therefore, the Balanced Scorecard integrates lagging indicators (e.g., revenue from new products) and leading indicators (e.g., number of new ideas generated, R&D investments, team member training related to innovation). For example, the learning and growth perspective focuses on developing the capabilities required for innovation, such as fostering a culture of creativity, investing in team member competencies, and enhancing technological infrastructure. The internal business process perspective tracks how well an organization's innovation processes—such as idea generation, product development, and commercialization—perform. The customer perspective evaluates whether innovations deliver value that

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meets or exceeds customer expectations, contributing to satisfaction and loyalty. By applying the Balanced Scorecard, organizations can systematically monitor how their innovation initiatives contribute to overall strategy execution and organizational success. It ensures that innovation efforts are not isolated but embedded within a broader performance management system that promotes alignment, accountability, and continuous improvement (Kaplan & Norton, 1996). In the case of institutions like BKI Academy, adopting a Balanced Scorecard approach would allow for the comprehensive tracking of innovation-related objectives across multiple dimensions, supporting its mission to provide high-quality, industry-relevant maritime training while maintaining competitiveness in a dynamic environment.

III. Research Method and Materials

This study uses a descriptive research design that aims to understand how BKI Academy combines and applies various innovation models in its academic environment and analyzes the impact of combining these innovation models on the development of BKI Academy as a superior maritime educational institution. This study will use documentation techniques as a method of data collection. Documentation techniques are used to obtain secondary data from sources such as books, journals, literature, notes, and reports relevant to the research topic. The data analysis design used in this study is descriptive analysis. This analysis will describe and explain the findings of secondary data obtained through documentation techniques.

IV. Results and Discussion

4.1. Description of General Organization

4.1.1. History and Core Functions of BKI Academy

BKI Academy was established in August 2018 as part of PT Biro Klasifikasi Indonesia's strategic initiative to enhance human resource competencies in the maritime and related industrial sectors. The establishment of BKI Academy reflects BKI's commitment to supporting national development through education, training, and competency development programs that address the evolving needs of the maritime industry and other strategic sectors. The primary duties and functions of BKI Academy are formalized in the Board of Directors Decree Number DU.007/HK.303/KI-21, dated February 26, 2021. This decree defines BKI Academy as a Center of Excellence responsible for driving the organization's strategic and operational training and competency development goals. The primary responsibilities of the Center of Excellence at BKI Academy include:

1. Consolidation of Strategy – Aligning training and development initiatives with the overarching strategic direction of BKI and national maritime priorities.
2. Competency Management – Designing, implementing, and monitoring programs to enhance personnel's technical and managerial competencies across various sectors.
3. Operations Management – Ensuring effective and efficient delivery of training programs and related services through robust operational processes.
4. Quality Control & Assurance – Maintaining high service delivery standards through systematic quality management practices, evaluations, and continuous improvements.
5. Development of Each Portfolio – Creating and expanding specialized training portfolios that address the dynamic needs of the maritime, energy, construction, and industrial sectors.
6. National Portfolio Performance Targets – Setting and achieving key performance indicators related to national competency development objectives, revenue generation, and service impact.

These core functions position BKI Academy as vital in Indonesia's efforts to build a world-class

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maritime workforce and support industrial competitiveness through innovation-driven training and education services. The Academy's role as a Center of Excellence reflects its mandate to lead in competency development, standardization, and knowledge dissemination across the sectors it serves.

4.1.2. Center of Excellence for Skills Development

As part of its mandate as a Center of Excellence, BKI Academy focuses on skills development that is reflected through several critical dimensions essential for delivering high-quality training and competency-building services:

1. Human Resources (Type and Number of HR, and Future Knowledge Management) – BKI Academy prioritizes recruiting, developing, and managing qualified human resources to ensure that experts with deep technical knowledge and practical experience deliver training programs. In the future, the Academy aims to evolve its human resource practices towards a knowledge management model, where institutional knowledge is systematically captured, shared, and utilized for continuous improvement and innovation.
2. Equipment (Maintenance) – To support practical and hands-on learning, BKI Academy emphasizes providing and properly maintaining training equipment. Ensuring that training tools and simulation systems are current and in optimal condition is critical for delivering compelling learning experiences that mirror real-world scenarios in the maritime and industrial sectors.
3. Licensing (Control) – The Academy controls licensing and certification processes to ensure national and international standards compliance. This focus helps safeguard the credibility of the certifications issued and supports the professional recognition of its graduates.
4. Experience (Track Record) – BKI Academy leverages its growing track record of successfully delivered training programs and collaborations with key stakeholders to prove its capability and reliability. The Academy's experience is a foundation for expanding its training portfolios and forming new strategic partnerships.
5. Work Partners – Building and sustaining relationships with government agencies, industry players, and academic institutions are integral to BKI Academy's approach. These partnerships facilitate collaborative program development, knowledge exchange, and alignment with industry needs, ensuring that training offerings remain relevant and impactful.

Collectively, these dimensions reinforce BKI Academy's role as a leading institution in maritime skills development, dedicated to supporting Indonesia's industrial competitiveness through high-standard, innovation-driven training solutions.

4.1.3. Responsibilities and Rights of BKI Academy

BKI Academy, as a strategic unit under PT Biro Klasifikasi Indonesia, carries specific responsibilities and rights that support its function as a Center of Excellence and its maritime and industrial training mission.

a. Responsibilities

BKI Academy's key responsibilities include:

1. National income achievement according to the portfolio – BKI Academy is tasked with generating income aligned with its designated portfolio areas, contributing to organizational sustainability and national economic objectives.
2. Sustainability and development of the portfolio, availability of resources and competencies, and business development in the sector – The Academy ensures that its training portfolios are continuously developed and adapted to meet evolving industry demands. This includes

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maintaining adequate resources and competencies while fostering business growth in its service sectors.

3. Quality Assurance / Quality Control (QA/QC) of its portfolio – BKI Academy is responsible for implementing QA/QC mechanisms to uphold the' integrity, consistency, and high standards of its training programs and services.
4. Tender registration via the system or website – The Academy oversees and manages tender registration processes through official systems or platforms, ensuring transparency, efficiency, and compliance with organizational policies.

b. Rights

In fulfilling its responsibilities, BKI Academy holds the following rights to ensure autonomy and effectiveness in its operations:

1. Organize and coordinate branches – BKI Academy has the authority to organize and oversee its branch operations to maintain alignment with strategic and operational objectives.
2. Determine policies related to portfolio management and development – The Academy has the right to formulate and implement policies that govern the management and expansion of its training portfolios, ensuring responsiveness to market needs and organizational priorities.
3. Strategic project succession – BKI Academy is empowered to manage and oversee strategic projects, including succession planning, to ensure the continuity and sustainability of key initiatives.
4. Handling service requests such as management/tenders, costs, and selling prices – The Academy can process and make decisions on service requests, including tender management, pricing, and cost-related matters, by established guidelines and strategic objectives.

These responsibilities and rights collectively provide BKI Academy with the structural foundation to operate effectively as a national leader in maritime training and competency development, while ensuring alignment with PT Biro Klasifikasi Indonesia's broader corporate strategy. BKI Academy's core service offerings are designed to address diverse training and development needs across various sectors. These services are structured into three main categories:

1. MICE (Meetings, Incentives, Conferencing, Exhibitions)
   BKI Academy provides professional MICE services, offering comprehensive solutions for meetings, incentives, conferences, and exhibitions. These services support knowledge sharing, stakeholder engagement, and industry collaboration through well-organized events that align with client objectives.
2. Internal Training (In-House Training)
   BKI Academy offers customized in-house training programs tailored to meet the specific needs of corporate clients and government agencies. These programs are designed in collaboration with clients to address unique organizational challenges, enhance competencies, and support strategic goals.
3. Public Training
   The Academy conducts public training sessions open to individual participants and organizations. These programs address general competency requirements and provide opportunities for participants from various backgrounds to enhance their skills and knowledge in a structured learning environment. This integrated service model reflects BKI Academy's commitment to delivering flexible, high-quality training solutions catering to individual and organizational needs, supporting capacity building across the maritime and industrial sectors. These diverse service offerings reflect

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BKI Academy's strategic approach in delivering comprehensive training and development solutions. To guide these efforts and ensure alignment with its long-term goals, BKI Academy operates under a clear vision and mission, as outlined below.

Table 1. Alignment of BKI Academy

Vision	Mission
Providing knowledge and expertise that can significantly increase work productivity and effectively increase contributions to achieving organizational goals.	Ensuring learners achieve qualifications promptly and receive quality services that result in a positive learning experience. Creating a common understanding so there are no different interpretations in the survey and inspection process, and updating stakeholders on regulatory developments.

To effectively realize its vision and mission, BKI Academy is supported by an organizational structure that ensures efficient management and coordination across its key functional areas. The following diagram illustrates the organizational structure of BKI Academy.

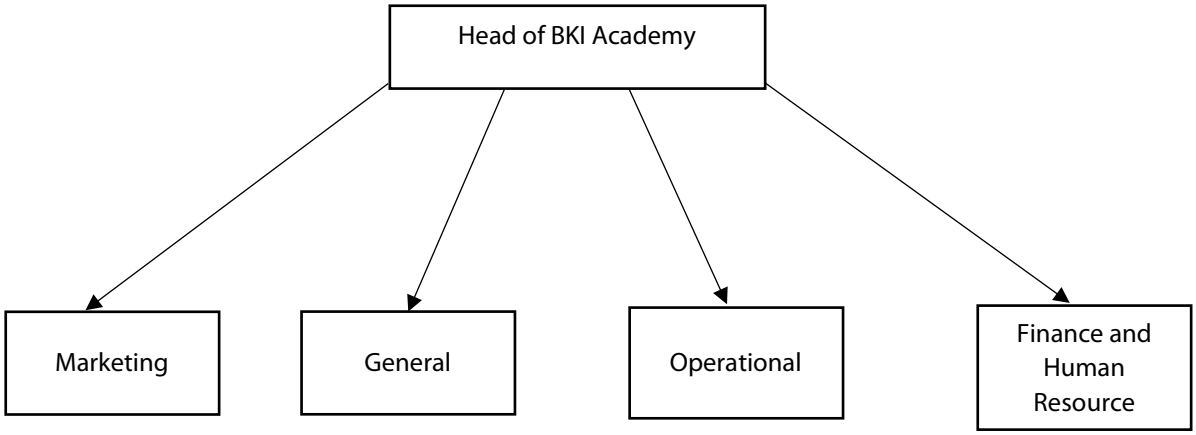

Figure 2. BKI Academy Structure

4. Personnel Job Description at BKI Academy

To ensure the smooth operation of its programs and the achievement of its strategic objectives, BKI Academy assigns clear roles and responsibilities to each functional unit within its organizational structure. These roles support the Academy's vision, mission, and service delivery through well-coordinated teamwork across key departments. The following summarizes the main job descriptions of personnel at BKI Academy:

- Head of BKI Academy:
  Responsible for managing unit activities, including business development and portfolio enhancement. The Head establishes strategies, oversees marketing activities, and ensures that reviews, evaluations, and verifications are conducted for all operations.
- Finance and Human Resources:
  Coordinates financial administration activities, updates financial reports, and calculates activity-related costs such as travel and allowances to support accurate budgeting and accountability.
- General Affairs:

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Manages asset monitoring and vendor or trainer contracts, provides logistical support for operations, and handles issuing draft debit notes for financial transactions.

- Operational Unit:
  Acts as the event organizer (EO) for the technical implementation of training, prepares and archives all training-related documentation, and compiles reports and certificates upon program completion.
- Marketing:
  Develops business plans for training services, maintains and increases sales volumes, and promotes training products to reach target markets and meet business objectives. These roles collectively contribute to BKI Academy's ability to deliver high-quality training, maintain operational excellence, and achieve sustainable growth in the competitive maritime and industrial education sector.

5. Operational Flowchart of BKI Academy
   The operational flowchart of BKI Academy illustrates the structured sequence of activities involved in planning, executing, and completing training programs.

This flow ensures that each stage of the training process is well-organized, accountable, and aligned with the Academy's standards for quality and customer satisfaction. The flow typically begins with training needs identification, where client or market requirements are analyzed. This is followed by program design, which includes curriculum development, selection of trainers or subject matter experts, and preparation of materials. Next, the implementation phase takes place, covering the technical and administrative organization of the training, content delivery, and participant engagement management. Documentation and record-keeping are maintained throughout the process to ensure transparency and compliance with internal quality standards. Upon completion, the evaluation phase is conducted. This includes collecting participant feedback, assessing learning outcomes, and identifying areas for improvement. The flowchart emphasizes the importance of a feedback loop, where insights from each training program are used to refine future offerings and enhance overall service quality.

This systematic operational process reflects BKI Academy's commitment to delivering effective, high-quality training programs that meet the evolving needs of the maritime and industrial sectors Implementation of the Fugel Process Innovation Model at BKI Academy: Sample case: In 2022, BKI Academy, in collaboration with the Directorate General of Capture Fisheries, Ministry of Maritime Affairs and Fisheries, conducted training on the eligibility of Fishing Vessel Inspection Officers in 3 Batches/Generations. In the implementation of the training, each batch consisted of approximately 70 (seventy) participants with different educational backgrounds and were from their office/work unit locations.

4.2. Idea Generation/Identification Stage

In the early stages, BKI Academy looked for creative ideas that would set them apart from their competitors, such as providing training for fishing vessel inspectors whose primary material is wood. For example, in 2022, the Ministry of Marine Affairs and Fisheries, Directorate General of Capture Fisheries, asked BKI Academy to provide special training for fishing vessel inspectors.

4.3. Concept Definition Stage

After identifying the idea, BKI Academy continues to define its ideas and implement Unique Selling Points (USP) in its services. For example, in the Ministry of Marine Affairs and Fisheries Training project, using resource persons from the KPK for integrity material, they explain the concept in policies involving the use of professional teachers, the use of the latest technology in learning, and the provision of complete facilities to support superior education.

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4.4. Feasibility and Concept Refinement Stage

BKI Academy's business feasibility analysis evaluates strengths, weaknesses, opportunities, and threats (SWOT) to ensure their idea can succeed. They then refine their idea based on the results of the analysis. In the implementation of training at the Ministry of Maritime Affairs and Fisheries, in terms of strength, BKI Academy is indeed focused on the maritime world so that in its implementation, the material provided by the instructors and the needs of the participants can be harmonized well so that participants can optimally understand what they need to do in the field. In terms of weaknesses, there are still different perspectives from each participant due to their different educational backgrounds, so the task of the speaker/resource person must be detailed in explaining the material presented so that participants have the same perception. Meanwhile, in terms of opportunities, the internal side of the Ministry of Maritime Affairs has hundreds of fishing vessels, so it automatically requires ship inspection officers, a large number of whom must take part in this training / and also need to be certified. The threat to BKI Academy is the emergence of agencies/ vendors starting to offer services/training similar to those provided by BKI Academy.

4.5. Innovation Portfolio Stage

Currently, BKI Academy is developing an innovation portfolio. Businesses must dare to take risks and create new solutions to win the competition in the market, and the efforts that BKI Academy has made in this regard are to create new training portfolios each year. A new K3 and welder certification field portfolio will be added shortly. This portfolio also includes various things, such as the use of the latest technology in learning, policies related to teachers, facilities, and unique learning methods that differentiate it from competitors. BKI Academy and the Directorate General of Capture Fisheries of the Ministry of Marine Affairs and Fisheries always communicate intensely regarding their internal parties' needs. The latest information after the implementation of the training for ship inspection officers is completed, it will be continued with the Supervision of Fishing Vessel Construction training from the beginning to becoming a Fishing Vessel that is truly operationally worthy in terms of Capture Worthiness, Storage Worthiness, and Seaworthiness.

4.6. Implementation Stage

The implementation of planned innovations, such as the use of technology in learning, the use of professional teachers, and different training offerings, occurs at the implementation stage. This helps BKI Academy to differentiate itself from competitors and create real added value for students. In order to compete with competitors, several ways that BKI Academy has done include increasing the number of trainings carried out such as public training and in-house training, increasing brand strength, expanding target markets, making customers satisfied and happy, maintaining customer relationships, improving the quality of training products, offering attractive promotions, expanding sales platforms, creating content on social media, providing payment options, and utilizing social media. In the implementation of the training provided by the BKI Academy to the Directorate General of Capture Fisheries, Ministry of Maritime Affairs and Fisheries, it is an in-house training because all training participants are from Fisheries Port Offices throughout Indonesia, and also the Head of the Port Office.

4.7. Refinement & Formalization Stage

At this stage, BKI Academy utilizes feedback from students, customers, and other stakeholders to continuously improve the innovations that have been implemented. This includes improving learning methods, facilities, and other services. Continuous improvement models, such as PDCA (Plan-Do-Check-Act), are used to identify and implement necessary improvements. At the end of the training with the Directorate General of Capture Fisheries of the Ministry of Maritime Affairs and Fisheries, the committee gave a

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questionnaire to all training participants as evaluation material for the future whether the implementation of the training had gone according to the participants' expectations, both in terms of the place of implementation, the materials provided and the teachers/resource persons who provided materials related to their respective specialist fields.

4.8. Exploitation Stage

After reaching maturity and sustainability, BKI Academy enters the exploitation phase. In this phase, they leverage their competitive advantages to attract more consumers, expand their geographic reach, and achieve sustainable growth. By further expanding and integrating its students, BKI Academy capitalizes on the success of its innovation. Some of the ways that BKI Academy has done to attract consumer interest include, providing special promos, utilizing social media through digital marketing, flyers and brochures, explaining the advantages of using training services at BKI Academy to consumers, providing customer testimonials, and providing exemplary service to customers, establishing cooperation with government or private parties for training procurement, sending emails to shipping companies, shipyards, oil companies and educational institutions. I will visit client offices and listen directly to them about what training needs they currently have to increase the competence of their employees, or related to the extension of their ship documents/licenses, holding webinars and customer gatherings. Efforts to develop Human Resources (HR) for Fishing Vessel Inspection Officers, Directorate of Fishing Vessels and Fishing Gear, Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries have been carried out to spur the growth and development of the maritime world. In the last 2 (two) years, 4 Batches/Generations have been implemented, and the plan in 2024 is to implement 2 Batches/Generations, where each generation consists of 40 (forty) participants.

4.9. Detailed SWOT Analysis of BKI Academy

A comprehensive SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis provides a strategic view of BKI Academy's position in the maritime education sector. This approach aligns with recommendations from Robbins and Coulter (2002), who emphasize that systematic internal and external analysis is critical to sustaining innovation and competitiveness.

4.9.1. Strengths

BKI Academy's foremost strength lies in its specialized focus on the maritime sector, which allows the institution to offer niche training programs that few competitors can match in Indonesia. This aligns with Schumpeter's (1934) view that unique competencies and specialization are crucial drivers of competitive advantage through innovation. The institution's integration with PT Biro Klasifikasi Indonesia (BKI) further strengthens its position, as it benefits from institutional support, industry reputation, and established networks. BKI Academy's use of professional trainers, collaboration with government agencies (e.g., the Directorate General of Capture Fisheries), and incorporation of integrity modules from institutions such as the Corruption Eradication Commission (KPK) reflect its commitment to quality and integrity in training delivery. Additionally, BKI Academy demonstrates an innovative culture by continuously updating its training portfolios to include new areas such as occupational health and safety (K3) and welding certification. This proactive development of new programs corresponds to Rogers' (1983) diffusion theory, where continuous innovation helps attract early adopters and maintain relevance.

4.9.2. Weaknesses

Despite these strengths, BKI Academy faces internal weaknesses that could impede its growth. One significant challenge is the diverse educational backgrounds of its participants, which can lead to varied levels

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of comprehension during training (as noted in their fisheries inspector programs). This heterogeneity demands more tailored instructional designs and adaptive teaching methods, increasing operational complexity and costs. Moreover, BKI Academy's reliance on in-house and government-commissioned training programs could limit its market flexibility and make it vulnerable to shifts in government policy or budget allocations. Chesbrough (2003) would argue that insufficient openness to external market partnerships and limited commercialization of in-house innovations could restrict long-term sustainability.

4.9.3. Opportunities

The maritime sector's continued growth and the increasing regulatory requirements for vessel safety, environmental compliance, and workforce competence present significant opportunities for BKI Academy. The institution can leverage these trends by expanding its certification offerings, developing e-learning platforms to reach remote stakeholders, and forming alliances with international maritime education bodies. These strategies align with open innovation principles, where cross-institutional collaboration and external knowledge integration can accelerate growth (Chesbrough, 2003). Digital transformation in training delivery—such as virtual reality for vessel inspections or simulation-based learning—also offers BKI Academy a pathway to enhance its unique value propositions and attract a broader audience. Moreover, Indonesia's strategic goal to become a global maritime axis provides an enabling environment for the academy to position itself as a leader in maritime workforce development.

4.9.4. Threats

The primary external threats stem from rising competition, local training providers beginning to offer similar programs, and international institutions that might enter the Indonesian market through partnerships or online platforms. Additionally, changes in regulatory frameworks or funding priorities could adversely affect BKI Academy's primary client base. Economic volatility, such as budget constraints in public sector agencies, can also impact demand for training services. In line with Schumpeter's (1934) concept of creative destruction, the academy must remain vigilant as emerging technologies and business models (e.g., fully digital certification programs or AI-driven learning platforms) could disrupt traditional training offerings unless BKI Academy itself leads such innovations.

4.10. Strategic Implications

The detailed SWOT analysis suggests that BKI Academy should:

a. Further embrace open innovation by actively forming international partnerships, licensing its proprietary training modules, and co-developing programs with technology providers (Chesbrough, 2003)
b. Enhance adaptive learning technologies to address participant diversity.
c. Strengthen its marketing and branding to counter rising competition and better communicate its unique value.
d. Institutionalize a balanced scorecard approach (Kaplan & Norton, 1996) to monitor and align its innovation initiatives with organizational strategy continuously.

By systematically leveraging its strengths, addressing internal weaknesses, seizing external opportunities, and mitigating threats, BKI Academy can sustain its competitive advantage and ensure long-term growth in the dynamic maritime education sector.

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4.11. Customer Satisfaction, Continuous Improvement, and PDCA Cycle Implementation at BKI Academy

4.11.1 Customer Satisfaction

Customer satisfaction is a critical success factor for educational institutions, especially those operating in specialized sectors like maritime training. According to Kotler and Keller (2012), customer satisfaction reflects a person's judgment of a product or service's perceived performance against expectations. In the context of BKI Academy, customer satisfaction is influenced by several factors, including the relevance of training content, the quality of instructors, the effectiveness of learning methods, the availability of facilities, and the administrative services. BKI Academy actively gathers customer feedback through post-training evaluation forms, questionnaires, and discussions with participants and institutional clients. This practice aligns with best practices recommended by Parasuraman et al. (1988) in the SERVQUAL model, which emphasizes measuring service quality dimensions such as reliability, responsiveness, assurance, empathy, and tangibles. By consistently monitoring these elements, BKI Academy ensures that its services meet or exceed stakeholder expectations. Moreover, BKI Academy's commitment to delivering added value—such as integrating integrity training with technical modules or offering customized solutions for government agencies—helps build long-term relationships and customer loyalty. This focus on customer satisfaction supports business sustainability and reinforces the Academy's reputation as a trusted provider in the maritime sector.

4.11.2 Continuous Improvement

Continuous improvement is embedded in BKI Academy's operational philosophy, supporting its mission to provide high-quality, relevant training services. Continuous improvement is the ongoing effort to incrementally enhance products, services, or processes over time or through breakthrough innovations (Imai, 1986). BKI Academy applies continuous improvement by:

- Regularly updating training curricula to align with the latest regulatory changes and industry standards.
- Enhancing teaching methods through technology adoption, such as incorporating multimedia learning tools and exploring virtual learning platforms.
- Upgrading facilities and learning environments based on participant feedback and benchmarking against national and international best practices.

This commitment aligns with Deming's (1986) principles, where organizations continuously refine processes based on data, feedback, and evolving stakeholder needs. This is evident in BKI Academy's efforts to introduce new certification programs and expand into emerging fields such as occupational health and safety (K3).

4.11.3 Implementation of the PDCA Cycle

The Plan-Do-Check-Act (PDCA) cycle, popularized by Deming (1986), is a cornerstone of quality management and continuous improvement. BKI Academy employs the PDCA framework to enhance its training operations and service delivery systematically.

1. Plan: BKI Academy begins with thorough planning that involves identifying training needs, setting objectives, designing curricula, and selecting qualified instructors. Planning is often done with stakeholders, such as government agencies, to ensure alignment with regulatory and industry requirements.

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2. Do: During the implementation phase, BKI Academy executes the training programs, ensuring that all planned elements—such as learning materials, methods, and logistics—are delivered as designed.
3. Check: Post-training, the Academy collects data through participant evaluations, feedback forms, and debriefing sessions with trainers and organizers. This stage assesses whether the training objectives were met and identifies gaps or areas for improvement.
4. Act: Based on the findings from the Check phase, BKI Academy makes necessary adjustments. This could involve revising course materials, enhancing instructor preparation, improving administrative processes, or upgrading facilities. The insights gained are then integrated into the next planning cycle, ensuring continuous improvement.

The application of PDCA at BKI Academy strengthens its internal processes and helps maintain high levels of customer satisfaction and service quality. It reflects the Academy's proactive stance in learning from each training cycle and embedding quality as a dynamic, evolving process rather than a static standard. This systematic approach ensures that the Academy remains agile and responsive to the changing demands of the maritime and industrial sectors it serves.

4.12. Comparison with Similar Cases in Maritime Education and Training Abroad

To further understand the position and practices of BKI Academy, it is valuable to compare its innovation and training approaches with established maritime education institutions abroad. This comparison highlights common challenges, best practices, and potential areas for further development.

1. Case of the Norwegian Maritime Authority (NMA) Training Programs
   Norway is widely recognized for its advanced maritime sector and high maritime education and training standards. In collaboration with maritime academies, the Norwegian Maritime Authority (NMA) emphasizes simulation-based learning, digitalization, and environmental compliance in its training programs. A key feature of the Norwegian model is its integration of cutting-edge simulators for bridge, engine, and cargo operations, as well as its strong focus on sustainability, including mandatory modules on energy efficiency and green shipping practices (Norwegian Maritime Authority, 2020). Compared to BKI Academy, both institutions are committed to aligning training with regulatory requirements and industry needs. However, the NMA training model leverages more advanced technology infrastructure, particularly in using immersive simulations and virtual reality tools. BKI Academy has the opportunity to adopt similar technologies to enhance the learning experience and prepare trainees for complex real-world scenarios, particularly in inspection and vessel operation competencies.
2. Case of Japan's National Institute for Sea Training (NIST)
   Japan's National Institute for Sea Training (NIST) provides maritime education combining rigorous theoretical instruction and extensive onboard training. NIST emphasizes international collaboration through joint programs with maritime institutions in Southeast Asia, Europe, and the U.S., reflecting an open innovation approach similar to Chesbrough's (2003) model. BKI Academy, while demonstrating strong domestic partnerships, could benefit from expanding its international collaborations to expose students and professionals to global best practices. Initiatives like exchange programs, joint certifications, and co-developed curricula with international maritime academies would position BKI Academy as a more globally connected institution.
3. Case of South Korea's Korea Maritime and Ocean University (KMOU)
   Korea Maritime and Ocean University (KMOU) offers a well-integrated system that combines academic programs with vocational and professional training. KMOU invests significantly in research and development, linking its training programs to shipbuilding, marine engineering, and ocean energy

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innovations. Moreover, KMOU's training programs include entrepreneurship modules encouraging maritime professionals to engage in start-ups and innovative maritime solutions (KMOU, 2019).

In comparison, BKI Academy has begun incorporating innovation and entrepreneurship elements in its training, particularly in maritime inspection and certification areas. However, BKI Academy could further strengthen this by embedding formal entrepreneurship development programs and innovation labs, where participants can develop and prototype solutions for industry challenges.

4.13. Summary of Comparative Insights

From these cases, several strategic insights emerge for BKI Academy:

a. Technology integration: Investing in simulators and digital learning platforms can enhance training quality and competitiveness.
b. International partnerships: Collaborating with global maritime education leaders can enrich curriculum content, promote knowledge exchange, and expand market reach.
c. R&D and entrepreneurship: Establishing stronger links between training and applied research and supporting maritime entrepreneurship can position BKI Academy as a center for innovation in the region.

These comparative insights emphasize the importance of continuously benchmarking against global best practices and adopting adaptive strategies that ensure long-term competitiveness in the maritime training sector.

V. Conclusion

BKI Academy has successfully built a strong business focusing on innovation, customer service, and creating added value that differentiates it from other competitors in the maritime education industry. With innovation as the central pillar, they have successfully created a competitive advantage, expanded market share, and maintained a good reputation. With consistent dedication and innovation, BKI Academy has proven to be a major player in the maritime education industry. It is ready to continue to grow and innovate. The integration of innovation at every stage of development has created an enabling environment to continuously innovate and provide high-quality education in a competitive environment, making innovation and continuous improvement the key to success in BKI Academy's journey.

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