Improvement of Information Technology Undergraduate Thesis Project

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ABSTRACT

Many students face challenges in the thesis preparation process, including time constraints, lack of integration with industry requirements, and lack of understanding of research methodology. This research aims to formulate another form of student thesis project with equal reasoning and difficulty level that can be measured and converted as a thesis. Apart from that, it also improves the quality and relevance of undergraduate thesis projects in Information Technology. The research method used is a descriptive approach, involving surveys and interviews. Research participants include Information Technology undergraduate students, supervisors, industry practitioners, and advisory boards. Data collection instruments include a structural questionnaire and interview guide designed to explore experiences, perceptions, and suggestions regarding changes in the preparation of the thesis project. The proposed solution involves implementing effective time management, closer integration with industry challenges through partnerships with companies, increased understanding of research methodologies, and adaptation of curricula to reflect dynamic changes in the Information Technology industry. It is hoped that the results of this research can provide concrete guidance for improving thesis projects and creating graduates who are better prepared and relevant to industry needs. Through this approach, it is hoped that this research can contribute to improving the academic process in producing higher quality and relevant thesis projects in the context of information technology.

Keywords: Information Technology, Thesis Project, Undergraduate

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INTRODUCTION

In the era of rapidly developing digital transformation, the role of undergraduate students in information technology is becoming increasingly crucial. An undergraduate thesis is not only a graduation requirement, but also a starting point for their career development and contribution to the ever-growing IT industry. Even though a thesis provides an opportunity to explore in-depth knowledge, implement technology, and apply theoretical concepts, the process of writing a thesis is often faced with challenges (Xu & Du, 2019). The rapid development of information technology brings various challenges to industry, which requires graduates who not only have theoretical knowledge, but also practical skills that can be applied quickly and effectively. The information technology industry is always changing dynamically, with the emergence of new technologies, software development methods, and evolving market needs. Security and privacy are becoming major concerns, with increasingly sophisticated cyber-attacks and growing ethical demands in data management. Companies in the IT industry emphasize the importance of innovation and implementation of technology that can provide added value and competitive advantage.

Critical evaluation of this process shows that there is room for significant improvement. Some of the problems that often arise are: Currently, the format and approach of these tend to be homogeneous, following traditional conventions. This research identifies possible innovations in the form, methods, and approaches of thesis projects to provide more creative and relevant variations (Grohnert et al., 2024). In addition, students often feel pressured by tight time constraints and limited resources, resulting in a reduction in the quality and depth of research that can be conducted (Mendoza et al., 2023). In addition, thesis projects are often not well integrated with the actual challenges and needs facing the IT industry. Students lack exposure to relevant practical problems in the real world. This can lead to a lack of relevance and applicability of student research results in the world of work (Stapa et al., 2014). It is because of this lack of engagement with industry issues that the risk arises that student research results are not fully relevant and may have a more limited impact on the industry. Other problems Another problem is that there is a gap in students' understanding of research methodologies that are effective and relevant to thesis projects in the field of information technology (Abdullah et al., 2013). Students often face difficulties in understanding and applying effective research methodology in the context of writing a thesis. This can cause uncertainty and confusion in the research process. Students often face difficulties in understanding and applying effective research methodology in the context of writing a thesis. This can cause uncertainty and confusion in the research process (Karlsholm et al., 2023). Lack of understanding of research methodology can lead to errors and loss of focus in data collection and analysis, reducing the accuracy and validity of research results.

In facing the complex challenges of the IT industry and ensuring undergraduate graduates are ready to face the world of work, there needs to be improvements in the process of preparing undergraduate theses in the field of information technology. By improving the thesis preparation process, students can optimize the use of time and resources, and improve the quality of their research. By integrating the thesis with the actual needs and challenges facing the IT industry, student research results can become more relevant and have a greater impact. Increasing students' understanding of

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effective research methodology will help them face their thesis projects with more confidence and depth (Corbett et al., 2023). Several solutions have been created, such as implementing effective time management programs and project management training for students. This involves teaching good planning strategies and wise allocation of resources. This can be implemented by holding regular workshops and training on time and resource management to help students plan their thesis projects more efficiently (Fernández-Cano et al., 2021). In addition, the solution is to Build close partnerships with companies and industry practitioners to identify actual challenges. Encouraging collaboration between students and companies to explore thesis projects that have direct relevance to industry needs (Yamada, 2022). This can be implemented by establishing an industry advisory board that is actively involved in defining the thesis project and providing direct guidance to students. Internship programs and project collaboration with companies will be integrated into the curriculum. The next solution is to adopt a practical approach to teaching research methodology, with a focus on direct applications in information technology research. They are providing more intensive guidance and mentorship from supervisors (Mohamed & Nordin, 2013). This can be done by integrating special courses on research methodology in the field of information technology, with a focus on direct applications in thesis projects. Encourage regular consultation sessions between students and supervisors. Apart from that, creating a curriculum that is flexible and can adapt to industrial developments, including regulatory updates and the latest technology. Integrate thesis projects that are dynamic and reflective of current industry trends. This can be done by creating regular evaluation periods to assess the relevance of the curriculum to industry needs (Ren & Zhu, 2023). Establish a monitoring group involving industry practitioners to provide regular input and updates.

This research aims to formulate another form of student thesis project that has equal reasoning and level of difficulty that can be measured and converted into a relevant thesis according to the focus to be achieved. In addition, this research provides concrete solutions and focuses on improving the process of preparing undergraduate thesis projects in the field of information technology, so that they can make a greater contribution to industry needs and the challenges faced by students. This research will contribute to improving the quality, relevance, and effectiveness of the resulting thesis projects. Thus, this research is directed at building a bridge between the world of academia and industry, creating graduates who not only have a strong theoretical understanding but are also able to face the challenges of the world of work better.

METHODS

It uses a descriptive research approach that combines quantitative and qualitative elements. This will provide insight into the changes and their impact on the student's thesis project. Descriptive research is a type of research that aims to describe or provide a systematic, accurate, and factual description of the facts, traits, characteristics, and relationships of certain variables that occur in a population or phenomenon (Kuipers & Verschuren, 2023).

The data used in descriptive research can come from primary data (data collected by researchers for certain research) or secondary data (data that previously existed and was collected for another

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purpose). The analytical method commonly used in descriptive research is descriptive statistics. It includes calculating the mean, median, mode, standard deviation, and percentile values to describe the distribution and variation of data. Descriptive research often uses open-ended questions in questionnaire or interview design to provide space for respondents to explain their experiences or views in more detail. Observation is a method commonly used in descriptive research. Researchers can observe and record certain behaviors, events, or characteristics without interference.

Descriptive research can involve the entire population or use a representative sample. However, the main focus remains on presenting general information. Research participants consisted of Bachelor of Information Technology students who had completed their thesis projects using alternative approaches, as well as supervisors who were involved in directing these projects.

Schedule for tasks and milestones

The schedule for this research can be seen in Table 1.

Table 1. Schedule for tasks and milestones

Month	October		November				December
Weeks	3	4	1	2	3	4	1
Formulate project goals	■						
Make scientific studies from various sources to get the essence and best practices		■	■				
Formulate a summary of the study for the seminar				■			
Conduct seminars by presenting PTIK lecturers for discussions					■		
Formulate final guidelines for other forms of thesis						■	
Publish study results in the form of articles published in international journals							■

Project Initiation

Project initiation to explain the plans that will be taken to produce this project. See Table 2.

Table 2. Project Initiation

Identify Stakeholders	The stakeholders of this project are the academic community in the PTIK (PTIK & Informatics Engineering Study Program) department at UNIMA consisting of lecturers, students and administrative staff.
Project Scope	This project is limited to the area of explaining other forms of undergraduate students' theses as a requirement for obtaining a bachelor's degree in the PTIK department at UNIMA

Determining SMART goals	Specific: this project specifically creates a product that focuses on recognizing the equality of the thesis form to other forms that have reasoning, study and scope that can be equivalent to an undergraduate student's thesis
	Measurable: this project can be measured by producing academic study documents which can serve as a guide for implementing other forms of thesis equivalent
	Achievable: the achievement of this project is by producing an academic study in another form that can be equivalent to a thesis
	Relevant:
	Time-bound: this project is planned to be carried out from October-December 2023.
Customer Requirements	The customer needs analyzed are the need for recognition of other forms of theses carried out by final year undergraduate students in the UNIMA PTIK department and to meet the needs of Unima PTIK lecturers and external examiners both to guide and test the final product produced by students who have received recognition. from various parties and can be equated with the thesis
Define Project Approach	This project uses a qualitative approach with data analysis from collected documents

Planning Phase	
Milestones that lead up to goal completion	1. Formulate project goals
	2. Make scientific studies from various sources to get the essence and best practices
	3. Formulate a summary of the study for the seminar
	4. Conduct seminars by presenting PTIK lecturers for discussion
	5. Formulate final guidelines for other forms of thesis
	6. Publish the results of the study in the form of articles published in international journals

Determining how and how often to communicate with team members and stakeholders

RESULTS AND DISCUSSION

Precondition

To write another form of thesis in an undergraduate program, a graduate must at least:
1. Master theoretical concepts in certain fields of knowledge and skills in general and specifically to solve problems procedurally following the scope of work, namely the engineering field according to the competence of scientists in the study program; And
2. Able to adapt to changing situations faced;

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In undergraduate or applied undergraduate programs, the minimum study load is 144 (one hundred and forty-four) semester credit units designed with a Curriculum Period of 8 (eight) semesters.

Students in undergraduate programs can fulfill part of the study load outside the study program with the following conditions:

1. 1 (one) semester or the equivalent of 20 (twenty) semester credit units in a different study program at the same university; And
2. a maximum of 2 (two) semesters or the equivalent of 40 (forty) semester credit units outside of higher education

Achievement

Study programs in undergraduate or applied graduate programs ensure the achievement of graduate competencies through:

a. giving final assignments which can be in the form of a thesis, prototype, project, or other similar form of final assignment either individually or in groups; or
b. implementation of a project-based curriculum or other similar forms of learning and assessments that can demonstrate the achievement of graduate competencies.

Evaluation

Condition

(1) Final assignment assessment is carried out by examiners appointed by the tertiary institution.
(2) Examiners who come from outside universities must:
   a. Independent from the implementation of the final project research being assessed
   b. Free from potential conflicts of interest with both students and the promoter team.

Form of Assessment

Another form of assessment for the final project/thesis, in the form of

1. Recognition of other forms of thesis can be done if the student has achieved a minimum of 140 credits
2. Assessment or testing of the products produced is guided by appropriate scientific studies and applicable procedures at Manado State University
3. Forms of assessment or testing of other forms of theses carried out in seminars on product results or other forms of theses and followed by comprehensive tests to ensure the achievement of graduate competencies according to their knowledge.
4. Another form of thesis that is carried out in a group, is the recognition can be carried out by individual assessment with each group member having to describe the tasks/parts carried out independently on the product and their overall relationship/integration to the project or other form of the thesis.

Prototype/Application Project (software)

Prototype/Application Project (software) that was created independently/as Head of the Development Team and has been implemented at an institution/company and contributes to solving a problem at the institution/company and/or contributes to society and contributes to specific knowledge.

Background thinking

Software applications that are created independently and/or as head of a development team and have been implemented at an institution/company and contribute to solving a problem at the institution/company and/or community contributions and contributions to specific knowledge can be recognized as a final project. because it is deemed to have fulfilled scientific reasoning in resolving a business process problem at an institution/company and has also gone through a comprehensive application testing process according to engineering procedures so that it can contribute to knowledge in a specific and beneficial manner at that institution/institution. The development team leader's role is to coordinate the entire development process starting from requirements, analysis, design, application construction (algorithms + coding), application testing, and implementation in the company (Nordsteien et al., 2017). Thus, this section can be aligned as another form of thesis and can be recognized.

Prototype/Information Technology hardware project

Prototype/Information Technology hardware project independently/as Head of the Development Team or in a specific field (Education & Development) and has been tested through steps whose validity has been proven so that the reasoning can be recognized and implemented in the industrial world and society

Background thinking

A hardware prototype that was created independently and/or as head of a development team and has been implemented at an institution/company and contributed to solving a problem at the institution/company and/or contributed to society and contributed to specific knowledge that can be equated (recognized) as a final project because it is considered to have fulfilled scientific reasoning in solving a business process problem at an institution/company, and has also gone through a comprehensive test process according to engineering procedures so that it can contribute to knowledge specifically and be useful to the institution/institution. The development team leader's role is to coordinate the entire development process starting from requirements, analysis, design, application construction (algorithms + coding), application testing, and implementation at the company. Thus, this section can be aligned as another form of thesis and can be recognized.

As Head of the Development Team in an Information Technology hardware project that will be run independently, students must have an in-depth understanding of a strong background of thought, as well as ensure that the project has a solid foundation and has been tested for validity. Things that need to be considered include Identifying Needs and Goals: The first step is to identify the needs and

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goals of the Information Technology hardware project. What do you want to achieve with this project? Is it the development of new hardware, updating existing hardware, or developing a new prototype? Research and Literature Review: conduct an in-depth literature review in the specific field you will explore. This will help students understand the latest developments in relevant technologies, and existing solutions, as well as obstacles that similar projects have faced. Technical Requirements Analysis: Identify all technical requirements needed to create the desired Information Technology hardware. This includes the selection of components, hardware, software to be used, and the required infrastructure. Planning and Design: students create a detailed plan for hardware development, including development stages, resource allocation, and project schedule. Next, design a hardware prototype according to the specified specifications. Testing and Verification: This is an important step in ensuring the validity of the project. Thoroughly test the hardware prototype according to the specified specifications. Use proven testing methodologies to verify that the hardware is functioning properly. Evaluation and Correction: After testing, evaluate the results. Identify problems, defects, or deficiencies in the prototype, and make necessary improvements. Ensure that the hardware meets expected quality and performance standards. Documentation: During the entire development process, it is important to document every step, test results, and changes made. This documentation will be the basis for validating and acknowledging your reasoning(Lin et al., 2024). Publication and Presentation: If the project has significant value, consider publishing the results in a scientific conference or journal. Additionally, prepare informative presentations to share your knowledge with the scientific and professional community. Patents or Intellectual Property Rights: If your project results in innovation or a unique design, consider protecting your intellectual property rights through patents or copyrights, if necessary. Integration with Other Projects: Finally, consider how the hardware prototype you develop will be integrated or used in the context of a larger project or broader application in the field of Information Technology. By following these steps and ensuring that all aspects of the project have been tested and verified, it can be ensured that the Information Technology hardware project has a solid foundation and can be recognized for its reasoning. The success of the project will depend on deep understanding, good development methodology, and the ability to carry out the project carefully and thoroughly(Adebisi, 2022).

Become a TEAM member for academic information technology studies

Become a TEAM member for academic information technology studies that are the basis for the formation of a legal product (UU, PERDA, etc.) or an information technology product that contributes to the scientific development of information technology and/or the people who use it, proven by proof of a job description as a valid member of the TEAM

Background thinking

The task of being a member of the Information Technology Academic Study Team which aims to create a legal product that is equivalent to an undergraduate thesis is important and complex. To succeed in this task, students need to have a strong background of thinking based on a deep

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understanding of several main aspects. Things to consider are Understanding Information Technology: As a team member, a deep understanding of information technology is key. This includes an understanding of the latest developments in information technology, industry trends, and ethical issues related to the use of information technology (Luo et al., 2023). Legal and Regulatory Foundations: Students need to understand the existing legal foundations related to information technology in Indonesia. This includes data protection laws, intellectual property rights, privacy rights, as well as other applicable regulations. Research and Methodology: students should have a good understanding of research methods used in computer science and information technology. This includes data collection methods, data analysis, and use of research resources. Literature Review: Conducting a literature review is an important step in identifying vulnerabilities or opportunities in the field of information technology. Students need to investigate previous research, scientific articles, and other relevant resources to understand the latest developments in information technology. Practical Experience: Experience in the field or practical projects in information technology can also be a valuable background. This will help students combine theory with practice and understand how information technology is used in real situations. Understanding of Social and Ethical Issues: Information technology often presents ethical and social challenges. Students need to understand how information technology impacts society, human rights, privacy, and other relevant issues. Analytical and Writing Skills: As a member of an academic study team, students must have strong analytical skills to evaluate data and identify solutions or recommendations. Good writing skills are also important to communicate your findings in a format appropriate to this assignment. Involvement in the Legal Process: students need to understand how legal products are created and implemented. This includes an understanding of the legislative process, regulatory formation, and the role of government in regulating information technology. With a solid background in thinking in all these aspects, you will be able to make a valuable contribution in forming a legal product that is equivalent to a Bachelor's Thesis in the field of Information Technology. Your ability to combine technical, legal, and social understanding will be a great added value to the academic study team (Lundgren & Robertson, 2013).).

A project equivalent to a thesis

A project equivalent to a thesis, which contributes to the scientific development of information technology and/or society

Background thinking

Things to think about in a project that is equivalent to a thesis in the field of Information Technology that contributes to the scientific development of Information Technology and/or society such as Development of Information Technology: An in-depth understanding of the latest developments in Information Technology is the main foundation. Developments such as artificial intelligence (AI), the Internet of Things (IoT), cloud computing, cybersecurity, and quantum computing are some examples of important developments that need to be understood. Challenge Identification: Identify concrete challenges or problems in the field of Information Technology that

are the focus of your research. For example, cybersecurity issues, data privacy, energy efficiency, or innovative software development. Literature Review: Conduct a comprehensive literature review to understand previous research related to the selected problem or topic. This will help determine research gaps that remain unanswered. Social and Practical Relevance: Ensure that the project has strong social and practical relevance. This means that this project must contribute to solving real problems in society or industry related to Information Technology (Kocatepe, 2021). Research Method: Determine the research method you will use to answer the research question. This could involve data collection, experiments, surveys, statistical analysis, or other research methods appropriate to the topic. Innovation and Contribution: Emphasize innovation in projects. Try to develop a new solution or approach that can make a valuable contribution to Information Technology scholarship or help solve an existing problem. Prototype or Software Development: If the project involves hardware or software development, ensure that the resulting prototype or product can prove the concept and provide clear benefits. Testing and Evaluation: Conduct rigorous testing and evaluate project results to ensure that the proposed solution is effective and efficient in addressing the identified problem. Presentation and Publication: As soon as the research is complete, prepare a complete and clear research report. Additionally, consider publishing findings in scientific journals, and conferences, or sharing knowledge through presentations at scientific forums. Impact on Society: Finally, evaluate the impact of the project on society or industry. Can the project improve efficiency, security, quality of life, or performance in the Information Technology area you are researching? This positive impact must be visible. By following this background of thought, you will be able to carry out a project equivalent to a thesis that not only contributes to the scientific development of Information Technology but also has a positive impact on society or the industry you are targeting (Stößlein & Kanet, 2016).

Student PKM

Background thinking
Student PKM is a program designed to allow students to develop their creativity, innovation, and skills outside the standard academic curriculum. Things to consider are:

The Importance of Developing Student Creativity: Deep understanding of the importance of developing student creativity as an integral part of higher education. Creativity is a skill that is highly valued in a variety of professions and industries. Student Readiness for the World of Work: Awareness of the demands of the modern world of work which requires individuals who are creative, able to think innovatively, and can face change quickly (Ipanaqué-Zapata et al., 2023). This program will help students achieve better preparation for the world of work. Contribution to the Development of Science: Understand that developing student creativity can make a significant contribution to the development of science and discoveries. Students can play a role in identifying new solutions to complex problems. Linking Theory with Practice: Awareness that students often learn theory in their academic curriculum, but lack the opportunity to apply that theory in practical contexts. This program will enable them to connect theory with practice. Encouraging Research and Innovation Projects: An

understanding of the importance of this program in encouraging students to engage in research and innovation projects that have the potential to produce valuable contributions in their field of study. Improve Analytical and Critical Abilities: This program will help students improve their abilities in analyzing, evaluating, and reviewing the ideas and solutions they develop. Soft Skills Development: Awareness of the development of "soft skills" such as collaboration, communication, time management, and leadership required in creative projects. Community and Industry Interest: Understanding that creative projects resulting from this program can also provide benefits to society or certain industries, which will have a wider positive impact. Critical Thinking Development: This program will help students develop critical thinking skills in identifying problems, finding alternative solutions, and testing their ideas. Understanding of Academic Requirements: Understanding of the academic requirements that must be met by students to complete this program as a substitute for or supplement to an undergraduate thesis. Academic Portfolio Development: This program will help students build a rich academic portfolio with creative projects that can add value to their careers. With a strong background like this, the PKM program which is equivalent to an undergraduate thesis can be well designed to provide significant benefits to students as well as to society and the academic world (GROS-NAVÉS et al., 2022).

Publication in a journal accredited by at least Sinta 2 or Scopus Q4

Publication in a journal accredited by at least Sinta 2 or Scopus Q4, by including proof of correspondence that is valid and has a good reputation

Background thinking

Thoughts for publication in a journal accredited at least SINTA 2 or Scopus Q4 which can be considered equivalent to an undergraduate thesis. Relevance of Research to Accredited Journals: It is important to understand that accredited journals have a specific focus and scope. Make sure the research is very relevant to the topic that suits the journal (Oprisan, 2022). Careful reading of previous articles in the same journal is an important first step. Significant Scientific Contribution: The rationale must reflect an understanding of the importance of the scientific contribution of the research. Explain clearly what makes research different and why it is important in a scientific context. Understanding of Methodology: Explain the research methods that will be used and how they will provide valid and reliable data. Make sure this method meets the standards required by the journal. Identification of Position in the Literature Review: The rationale should include a strong literature analysis, which positions the research within a relevant theoretical framework. Explain how the research will complement or expand previous research. Research Conducted Thoroughly: Ensure research is conducted thoroughly and research methods comply with academic standards. Research results must be reliable and relevant. Appropriate Use of Scholarly Language: Accredited journals expect writing that is clear, precise, and academic. Make sure the research uses appropriate scientific language. Author Reputation: An author's reputation can influence the acceptance of an article in a reputable journal. Make sure the student or writing team has a strong track record in relevant research and scientific

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publications. Compliance with Journal Guidelines: Make sure to comply with all guidelines provided by the journal regarding writing format, article length, citations, bibliography, and other things expected by the journal. Peer Review and Proofreading: If a student's research is not accepted at first, don't give up. Some accredited journals require peer review and can provide suggestions for improvement. Consider correcting the student's article and resubmitting it. Communication with Journal Editors: Good communication with journal editors can help understand the specific requirements required by the journal. Make sure to keep correspondence professional and polite. By considering this background thinking and going through a thorough process, students can increase their chances of publishing research articles in accredited journals that have a good reputation and are equivalent to an undergraduate thesis (Fogarty & Mayo, 1999).

Earning a Patent

Earning a Patent, a simple patent as a TEAM member

Background thinking

Earning a patent or Intellectual Property Rights (IPR) is a significant achievement and can be equivalent to an undergraduate thesis in terms of research and scientific contributions. Some of the basic thoughts for this effort are:

The Importance of Innovation and Technological Development: Awareness of the importance of innovation in technological development. Innovation is one of the main drivers of progress in various industries and sectors, and patents or IPRs are a way to protect and recognize this innovation. Contribution to Knowledge and Industry: Understanding that patents or IPRs can make valuable contributions to knowledge in a particular field. In-depth research and development of new technologies often involve patentable aspects. Legal Protection and Recognition: The importance of having legal protection for intellectual work. By obtaining a patent or IPR, inventors or creators ensure that their innovation is protected and can be legally recognized. Facing Legal Challenges: Understanding of the legal and policy complexities related to patents and IPR. Researchers must understand the regulations and procedures that apply to applying for a patent or IPR. Thorough Filing Process: Awareness that filing a patent or IPR requires a thorough process, including preparation of claims, description of the innovation, and research of relevant literature. Commercial and Business Value: Understanding that patents or IPRs also have commercial value and can be used in business. This may include exclusive rights to produce or sell products or services based on the innovation. Role in the Research Ecosystem: Awareness of the role played by patents and IPRs in the research and innovation ecosystem. They can motivate further research and share knowledge(Pérez-Ros et al., 2021). Legal Skills Development and Intellectual Property Law: Understand that this endeavor also involves developing skills in intellectual property law, including a deep understanding of patents, copyrights, and related laws. Collaborating with IPR Institutions: Awareness of the importance of collaborating with authorized intellectual property rights institutions in filing patents or IPRs. This collaboration can help in the application process. Long-Term Benefits: Awareness that owning a patent

or IPR also has long-term benefits, such as the right to receive royalties from the use of the innovation by other parties. Required Scientific Publications: Understand that in some cases, scientific publications supporting a patent or IPR are required as proof of the validity of the innovation. By understanding the background of this thinking and undergoing a thorough and professional process, researchers can produce patents or IPRs that not only protect their innovation but also have significant academic and practical value, equivalent to an undergraduate thesis (Ahmad & Al-Thani, 2022).

Internships at national international or multinational companies

Internships at national international or multinational companies by producing or being involved in projects at the company that can solve a problem at the company

Background thinking

Internships at national, international, or multinational companies are a valuable opportunity for students to combine the theory learned in lectures with practical experience in the real world. Things that can be considered that can support the selection of an internship that can be equivalent to an undergraduate thesis are:

Deep Practical Experience: Understanding the importance of practical experience in understanding the concepts and theories taught in higher education. Through internships, students can apply their academic knowledge in real-world situations. Relevance to Field of Study: Choose a company or internship project that is directly related to the student's field of study or major. This allows them to gain experience relevant to their specialization. Real World Problem Solving: Awareness of the potential of internships in providing opportunities to contribute to solving real problems in the company. Internships can allow students to be involved in projects that have a significant impact on the company. Access to Resources and Networks: Internships at large or multinational companies can provide access to abundant resources and extensive professional networks. This can be a valuable asset for future career development. Investigation and Analysis: The opportunity to conduct more in-depth research and analysis on the problems or challenges facing the company. Internships can provide access to data and information that may not be available to the public. Application of Academic Concepts: Internships allow students to apply academic concepts in real business settings. This helps them understand how theory is applied in daily practice. Critical Skills Development: Internships can also help in the development of critical skills such as problem-solving, analysis, communication, and time management. This is a skill that is highly valued in the world of work. Intercultural Experience: Internships at international or multinational companies can provide valuable intercultural experience, opening students' eyes to different cultures and working methods. Increased Job Opportunities: Awareness that internship experience at a prestigious company can increase student employment opportunities in the future. This experience can be a strong selling point in a job search. Recognition of Contribution: A successful internship can be recognized by the company as a valuable contribution, which can create opportunities to participate in further projects or even job offers (Altman-Singles et al., 2023).

By considering this rationale and choosing a relevant internship, students can optimize the benefits of their internship and understand how this experience can be equivalent to a bachelor's thesis in terms of learning and professional development.

Publication of books with ISBNs at IKAPI member publishers

Publication of books with ISBNs at IKAPI member publishers, by including proof of correspondence that is valid and has a good reputation

CONCLUSION

This research concludes that alternative forms of thesis can provide great benefits in producing more creative, adaptive, and relevant graduates to industry needs. Recommendations include improving lecturers' mentoring approaches, further support for students' exploration of creative ideas, and closer integration between academia and industry in directing thesis projects. This research provides a basis for better understanding the potential of alternative forms of thesis in the context of Information Technology. It contributes to discussions regarding innovation in academic approaches at the undergraduate level. This research also concludes that there is significant variation in alternative thesis projects, including industrial practice-based projects, community-based application development projects, and applied research projects integrated with industrial needs.

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