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Analysis of Student Needs Related to the Digital Economics Course Learning Model Based on Project Based Learning (Pjbl) for Strengthening Student Digital Business Competence

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A B S T R A C T

The rapid development of digital technology has transformed various aspects of human life, including education and business. Higher education institutions are expected to produce graduates who possess digital competencies and are capable of adapting to the changes brought about by the Industrial Revolution 4.0 and Society 5.0 era. One of the courses that plays a significant role in equipping students with these competencies is the Digital Economics course. However, learning activities that are still predominantly based on lecture methods provide students with limited practical experience in developing digital business skills. Therefore, there is a need for a learning model that effectively integrates theoretical knowledge with practical application. This study aims to analyze students' needs regarding the development of a Project-Based Learning (PjBL)-based Digital Economics learning model to strengthen their digital business competencies. The research employed a quantitative descriptive approach involving 120 students who had completed the Digital Economics course as respondents. The findings indicate that 91.3% of students prefer project-based learning involving real-world projects, 91.42% emphasize the importance of integrating digital technology into the learning process, and 91.6% consider digital business competencies to be essential for their future careers. These findings suggest that the development of a Project-Based Learning (PjBL)-based instructional model is highly necessary to enhance students' digital business competencies

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INTRODUCTION

The development of digital technology over the past decade has fundamentally transformed the way people produce, transact, and interact in economic activities (Evenddy & Gailea, 2023). These changes require human resources with expertise in digital business areas such as digital marketing, technological literacy, the use of e-commerce platforms, and the ability to design and implement digital-based business models. Digital transformation has brought significant changes to the business world (Hussein, 2021). Economic activities that were previously conducted conventionally have now largely shifted to digital platforms. E-commerce, digital marketing, financial technology, artificial intelligence, and big data have become integral parts of modern business activities (Daryati, 2018).

These changes require universities to prepare graduates who not only understand economic theory but are also capable of applying digital technology in business activities. One approach that can be taken is through instruction in the Digital Economics course (Rineksiane, 2022). However, the teaching of Digital Economics in universities still faces various challenges. Students receive more theoretical material than hands-on practice. Consequently, students lack experience in managing digital businesses, creating digital marketing content, conducting digital market analysis, and developing technology-based business strategies (Thoriqhabib et al., 2026). The Project-Based Learning (PjBL) model is considered capable of addressing these challenges because it places students at the center of learning through real-world projects relevant to the professional and business worlds. Given these conditions, it is necessary to analyze students' needs regarding the development of a PjBL-based Digital Economy learning model to strengthen students' digital business competencies.

Digital economics courses hold great potential for building competencies in the digital age; however, field observations by researchers indicate that the learning process still largely focuses on the delivery of theory. As a result, students' digital business competencies—such as the ability to design digital marketing strategies and develop digital products—have not yet developed optimally. This situation highlights a gap between the needs of the digital industry and classroom learning practices. To bridge this gap, a more innovative, contextual, and real-world project-oriented learning model is needed. One of the most relevant approaches is Project-Based Learning (PjBL). With the PjBL model, students can learn through direct experience by developing projects based on real-world problems, such as designing digital businesses, creating digital marketing content, and conducting online market analysis.

The development of a PjBL-based learning model for the digital economics course is crucial because it can enhance student engagement in the learning process, integrate theory with digital business practices, foster creativity, collaboration, and problem-solving skills, and strengthen the competencies required in a technology-driven workplace. Based on the above discussion, the researchers developed a Project-Based Learning (PjBL)-based instructional model for the digital economics course as a solution to comprehensively and

sustainably strengthen students' digital business competencies (Sari & Angreni, 2018).

Previous research has extensively discussed the success of implementing the PjBL model. Previous studies have applied PjBL to general courses, and they have primarily measured cognitive learning outcomes, critical thinking skills, and learning motivation. Furthermore, previous research has taken the form of case studies, descriptive analyses, and simple experiments. So the novelty of this upcoming research lies in its focus on strengthening students' digital business competencies through project-based learning, as well as producing a scientific output in the form of a systematically designed learning model. This model will be validated by experts in digital economics and learning specialists, tested for practicality—specifically through faculty and student feedback—and evaluated for its effectiveness in enhancing digital business competencies. This will provide theoretical and practical contributions not offered by previous research. Generally, research stops at publication or model description, but this study will produce a model guide, learning tools, a digital project assessment rubric, and an observation sheet.

LITERATURE REVIEW

a. Digital Economy

The digital economy refers to economic activities that utilize digital technology as the primary means of production, distribution, marketing, and consumption of goods and services (Siti Helmyati1, 2024). According to the OECD (2020), the digital economy encompasses all economic activities that rely on digital technology and the internet. The competencies required in the digital economy include: Digital Marketing, E-Commerce Management, Content Creation, Data Analytics, Social Media Management, Financial Technology Literacy, and Digital Entrepreneurship.

b. Project-Based Learning (PjBL)

Project-Based Learning is a student-centered learning model that involves completing real-world projects that result in specific products. The characteristics of PjBL include: being student-centered, based on real-world problems, resulting in a product or piece of work, encouraging collaboration, developing critical thinking skills, and integrating technology (Agusdianita, 2023).

The steps for Project-Based Learning (PjBL) according to the Ministry of Education and Culture are as follows:

1. Determining the Essential Question (Start with the Essential Question)

The first stage in the Project-Based Learning (PjBL) model is to identify a fundamental question that will serve as the starting point for learning. A fundamental question is one that is contextual, challenging, and capable of stimulating students' curiosity to seek solutions to a real-world problem (et al., 2023). At this stage, the instructor plays a role in designing or facilitating the emergence of questions relevant to the course's learning outcomes. The formulated questions must be able to connect the learning material with conditions occurring in society or the workplace so that students can understand

the benefits of the material being studied. In the Digital Economy course, for example, instructors can pose questions such as "What are effective digital marketing strategies to increase sales of SME products?" or "How can social media be utilized as a tool for digital business development?" These questions will serve as the foundation for students to conduct exploration, gather information, and complete the projects they will undertake. Through this stage, students are encouraged to think critically and creatively, as well as to identify issues relevant to current developments in the digital economy.

2. Designing a Project Plan (Design a Plan for the Project)

Once the fundamental questions have been identified, the next step is to develop a project plan. At this stage, instructors and students collaboratively design the various activities to be carried out to complete the project. Planning includes defining project objectives, activity steps, learning resources to be used, required tools and materials, task distribution within the group, and the final product to be produced (Oktaviani & Waqqosh, 2026). Student involvement in developing the project plan aims to enhance a sense of responsibility and ownership toward the project to be undertaken. In the Digital Economy course, students can plan projects such as creating an online store, developing a digital marketing strategy for a product, producing social media-based promotional content, or drafting a digital business plan (Busnawir, 2026). Thorough planning helps students understand the work stages that must be completed and minimizes various obstacles that may arise during the project implementation process. Additionally, this stage also trains students' ability to design activities in a systematic and structured manner.

3. Developing an Implementation Schedule (Create a Schedule)

The third stage is to develop a project implementation schedule. The schedule is designed to organize the timing of each activity so that the project can be completed according to the predetermined targets. During the scheduling process, students are actively involved in determining the time required for each stage of the work, ranging from information gathering, field observations, product development, to the presentation of project results. This activity aims to develop students' time management skills, discipline, and sense of responsibility in completing tasks. In the Digital Economy course, the project schedule may include activities such as identifying digital business opportunities, conducting market surveys, creating marketplace accounts, developing digital marketing strategies, executing product promotions, and evaluating sales results. With a clear schedule, students can monitor project progress and ensure that each group member performs their tasks according to the agreed-upon timeline.

4. Monitoring Student Activities and Project Progress

The monitoring phase is a process of supervision and guidance provided by instructors while students are carrying out their projects. During this phase, instructors serve as facilitators who provide direction, motivation, and assistance when students encounter difficulties in completing their projects. Monitoring is conducted periodically to ensure that projects proceed in accordance with the

established plans and objectives. Forms of monitoring may include group discussions, project consultations, progress reports, or direct observation of student activities (Wahyuni, Sari; Tirsa, 2026). In Digital Economics courses, instructors can monitor students' progress in creating online stores, managing business social media, developing digital marketing strategies, or conducting market analysis. Through monitoring activities, instructors can provide constructive feedback so that students can correct mistakes and improve the quality of the projects they are working on. Additionally, monitoring helps students develop problem-solving and decision-making skills.

5. Assess the Project Outcomes

Once the project has been completed, the next step is to test or evaluate the project outcomes produced by the students. The evaluation is conducted to determine the extent to which students have succeeded in achieving the established learning objectives. At this stage, students present their project outcomes to the instructor and their classmates, and then receive feedback and an evaluation of the final product. The assessment focuses not only on the final results but also encompasses the project development process, creativity, teamwork skills, communication skills, and problem-solving abilities. In the Digital Economy course, the assessed project outcomes may include an active online store, a digital marketing campaign run via social media, a digital business analysis report, or a technology-based business proposal. Through this stage, students gain real-world experience in taking responsibility for their work while developing presentation and argumentation skills that are essential in the professional world.

6. Evaluating the Learning Experience (Evaluate the Experience)

The final stage in the Project-Based Learning model involves evaluating the learning experiences gained during the project. This evaluation is conducted through reflective activities that allow students to review the learning process they have undergone. At this stage, students are asked to identify successes, obstacles, challenges, and lessons learned while working on the project. Instructors also provide students with the opportunity to share their opinions and experiences regarding the effectiveness of the learning process. In the Digital Economy course, reflection can be conducted by discussing students' experiences in managing digital businesses, facing market competition, utilizing digital technology, and collaborating in teams. The results of this reflection serve as evaluation material for instructors to improve the learning process in subsequent sessions. Additionally, evaluating learning experiences helps students develop reflective thinking skills, enhance self-awareness, and strengthen competencies acquired during the project-based learning process. Overall, these six steps of Project-Based Learning form a systematic, active, and real-world experience-oriented learning process. In the Digital Economics course, the implementation of PjBL enables students not only to understand digital economic concepts theoretically but also to apply them in digital business projects that are relevant to the needs of the workforce and the business world. Thus, the PjBL model can

serve as an effective learning alternative for strengthening students' digital business competencies in the era of digital transformation.

c. Digital Business Competencies

Digital business competencies are a set of knowledge, skills, attitudes, and abilities that individuals possess in utilizing digital technology to create, develop, manage, and enhance the economic value of a business. These competencies are particularly important in the era of digital transformation, as nearly all business activities today rely on information and communication technology in operational processes, marketing, customer service, and business decision-making. Individuals with digital business competencies are not only capable of using technology but also of integrating it to drive innovation, boost productivity, and generate a competitive edge in the business world. In the context of higher education, digital business competencies are among the key competencies that students must possess to adapt to the increasingly digitized world of work and industry. Digital business competencies encompass various interconnected aspects, including digital literacy, digital marketing, marketplace management, social media management, digital data analysis, digital product innovation, and digital communication.

METHODOLOGY

Research Approach

This study employs a quantitative descriptive approach. The quantitative descriptive approach was chosen because the study aims to systematically and objectively describe students' needs regarding the development of a Project-Based Learning (PBL)-based instructional model for the Digital Economics course to strengthen students' digital business competencies. Through this approach, data obtained from respondents are processed numerically and analyzed using descriptive statistics to provide a clear picture of students' conditions, needs, and expectations regarding the implemented learning process. Quantitative descriptive research does not aim to test hypotheses or identify causal relationships between variables, but rather to describe phenomena based on empirical data collected from the field. In this study, the phenomenon examined is students' need for a Digital Economics learning model capable of supporting the development of digital business competencies in line with the demands of the digital transformation era. The results of this needs analysis are expected to serve as a foundation for developing a learning model that is more effective, innovative, and relevant to the needs of students and the workforce.

Research Subjects

The subjects of this study are students who have taken the Digital Economy course at the Faculty of Economics and Business. The study sample consisted of 120 students from three programs: the Economics Education Program, the Accounting Education Program, and the Entrepreneurship Program. These students were selected because they have gained learning experience in the Digital Economics course and thus possess a sufficient understanding of the learning processes that have been implemented to date. The

student respondents represent a range of academic abilities and levels of experience with digital technology, so they are expected to provide diverse insights regarding the learning needs they perceive. Furthermore, the involvement of students from three different study programs allows for a more comprehensive understanding of the needs regarding the development of a PjBL-based Digital Economics learning model. Consequently, the research findings can serve as a foundation for designing a learning model that aligns with the characteristics and needs of students across various study programs within the Faculty of Economics and Business.

Data Collection Method

Research data was collected using a student needs analysis questionnaire designed based on the research objectives. A questionnaire was used because it is considered capable of effectively and efficiently collecting data from a relatively large number of respondents. The questionnaire instrument contained a number of statements related to students' needs regarding Project-Based Learning (PjBL)-based Digital Economics instruction for strengthening digital business competencies. Respondent answers were measured using a five-point Likert scale, ranging from a score of 1 to 5. The scale consisted of: (1) Strongly Disagree, (2) Disagree, (3) Somewhat Agree, (4) Agree, and (5) Strongly Agree. The use of the Likert scale allows researchers to measure the level of respondents' agreement with each statement presented and provides a quantitative overview of students' needs regarding the developed learning model.

The research instrument was designed based on several need indicators considered relevant to the development of a PjBL-based Digital Economics learning model. The indicators analyzed include the need for innovative learning models, the need for project-based learning, the need for digital technology in the learning process, the need to enhance digital business competencies, and the need for collaboration and fieldwork. Each indicator is broken down into several items designed to explore students' perceptions and needs in greater depth.

Needs Analysis Indicators

The first indicator is the need for innovative learning models. This indicator aims to determine the extent to which students expect learning models that are more engaging, interactive, and capable of increasing active participation in the learning process. Innovative learning is expected to reduce the dominance of lecture-based methods and provide a more meaningful learning experience.
The second indicator is the need for project-based learning. This indicator is used to identify students' need for learning activities that provide opportunities to complete real-world projects related to the digital economy. Through project-based learning, students are expected to be able to integrate theoretical knowledge with hands-on practice in the digital business world.

The third indicator is the need for digital technology. This indicator measures the extent to which students require the use of various digital technologies in the learning process, such as marketplaces, social media, digital collaboration platforms, content design applications, and other relevant technological tools within the digital economy field.

The fourth indicator is the need to enhance digital business competencies. This indicator aims to identify students' needs in developing skills related to digital marketing, marketplace management, digital data analysis, digital communication, and digital entrepreneurship. These competencies are considered essential for preparing students to enter the workforce and the business world in the digital age.

The fifth indicator is the need for collaboration and field practice. This indicator is used to measure students' needs for learning activities involving group work, interaction with business practitioners, field observations, and hands-on experience in managing digital businesses. These activities are expected to enhance social skills, teamwork abilities, and practical problem-solving skills.

Data Analysis Techniques

The data obtained from the questionnaire distribution was analyzed using descriptive statistics using percentage techniques. Descriptive analysis was used to describe the level of student need for each indicator studied. The collected data was first tabulated, then the frequency of respondents' answers to each statement item was calculated. These frequencies were then converted into percentages for easier interpretation.

The percentage of student needs is calculated using the following formula:

P=F\N X100%

Description:

P = Percentage

f = Frequency of respondents' answers

N = Number of respondents

The percentage calculation results were then interpreted to determine the level of student need for the development of a Digital Economy learning model based on Project-Based Learning (PjBL). The higher the percentage value obtained, the higher the level of student need for the studied aspect. The results of this analysis were then used as a basis for formulating a learning model design that aligns with student characteristics and the need to strengthen digital business competencies in the digital economy era.

RESEARCH RESULT

1. The Need for Innovative Learning Models

A needs analysis of innovative learning models was conducted to obtain information regarding students' perceptions and expectations regarding the ideal learning process in the Digital Economics course. These needs encompass aspects of student engagement in learning, opportunities for hands-on practice, and technology integration in the learning process. The data from the needs analysis of innovative learning models are presented in Table 2.

Table 2. The Need for Innovative Learning Models

No	Statement	Persentase
1	Need more interesting learning	90,2%
2	Requires more practical activities	92,8%
3	Requires technology-based learning	98,7 %
Average need for Innovative Learning Models		93,9%

Based on the results of a questionnaire administered to 120 students, information was obtained that the students' need for innovative learning models was in the very high category, with an average percentage of 93.9%. This result indicates that the majority of students desire innovation in the learning process that focuses not only on delivering theory but also provides a more active, engaging, and relevant learning experience in line with current technological developments.

The first statement, which emphasized the need for more engaging learning, achieved a percentage of 90.2%. This figure indicates that the majority of students feel the learning process they are currently following still needs to be developed to better attract attention and increase learning motivation. Students expect a variety of learning methods, the use of more interactive media, and learning activities that can increase their engagement during the lecture process. Engaging learning is believed to reduce boredom and help students understand the material better.

The second statement, which required more practical activities, achieved a percentage of 92.8%. This result indicates that students not only want to gain theoretical knowledge but also want broader opportunities to apply the concepts learned in practical activities. This high percentage indicates that students recognize the importance of hands-on experience in developing the skills and competencies needed in the workplace. In the context of the Digital Economics course, practical activities can include developing digital business projects, managing digital marketing, analyzing online markets, or utilizing various relevant digital platforms.

The third statement, which stated the need for technology-based learning, received the highest percentage, at 98.7%. This finding indicates that students are highly aware of the importance of utilizing technology in the learning process. This high demand aligns with the characteristics of the Digital Economics course, which is closely related to the use of information and communication technology.

Students expect learning that utilizes various digital applications, online learning platforms, interactive media, and technology that can support a more effective learning process and align with the demands of the digital era.

Overall, the average percentage of needs of 93.9% indicates that students have a very high need for the implementation of innovative learning methods. These results indicate that conventional lecturer-centered learning models have not been able to fully meet student expectations. Therefore, it is necessary to develop more interactive, technology-based learning models that provide opportunities for students to learn through real-world experiences. One suitable alternative is the implementation of Project-Based Learning (PjBL), because this model integrates the use of technology, practical activities, and active student involvement in completing projects related to the digital business world. Thus, the implementation of innovative learning models is expected to increase student learning motivation, digital skills, critical thinking skills, creativity, and readiness to face the challenges of the world of work in the digital economy era.

2. The Need for Project Based Learning

One relevant learning approach in the Digital Economics course is project-based learning. Therefore, a needs analysis was conducted to identify students' needs for learning that provides real-world experiences through digital business projects (Paľová et al., 2020). Aspects examined included students' interest in real-world projects, their desire to produce digital business products, and their direct involvement in business management. The results of the project-based learning needs analysis are shown in Table 3.

Table 3. The Need for Project Based Learning

No	Statement	Persentase
1	Interested in Learning Real projects	89,4%
2	Want to produce digital business products	93,6%
3	Want to manage the business directly	91,1%
Average Project-Based Learning Needs		91,3 %

Based on the results of the questionnaire analysis, students' need for the implementation of project-based learning (PjBL) is in the very high category with an average percentage of 91.3%. This finding indicates that students have a strong interest and need for learning that provides direct experience through project activities relevant to the real world. This high level of need indicates that students not only desire theoretical mastery of concepts but also expect opportunities to develop practical skills that can support their readiness to face the challenges of the world of work and business in the digital era.

The first statement, namely, interest in learning through real-life projects, achieved a percentage of 89.4%. This result indicates that most students prefer learning processes that involve solving problems or projects related to real-life situations compared to learning that only focuses on delivering theory. Through real-life projects, students can connect the concepts learned in class with the

needs and problems that occur in society and the business world. This condition indicates that students need contextual learning experiences so that learning becomes more meaningful and relevant. The second statement, namely wanting to produce digital business products, achieved the highest percentage at 93.6%. This high percentage indicates that students are very motivated to produce work or real products as a result of the learning process. In the context of the Digital Economics course, the resulting products can be online stores, digital marketing content, technology-based business designs, business websites, or other forms of digital innovation. This finding indicates that students desire learning that not only produces conceptual understanding, but also produces outputs that can demonstrate their competence and creativity in the field of digital business.

Furthermore, the percentage of students who stated they wanted to manage a business directly reached 91.1%. This result indicates that students have a strong desire to be actively involved in the business management process, from planning, implementation, and evaluation of business activities. Direct involvement in business activities provides students with the opportunity to develop critical thinking, decision-making, communication, teamwork, and managerial skills, which are essential for both the workplace and entrepreneurship.

Overall, the average percentage of 91.3% indicates that project-based learning is a highly sought-after approach among students. This high demand demonstrates that students desire a learning process that is more applicable, productive, and oriented toward creating real-world experiences. These findings provide a strong foundation for developing a Project-Based Learning (PjBL) model for the Digital Economy course. Through this approach, students not only gain theoretical knowledge but also have the opportunity to develop digital business competencies, 21st-century skills, and practical experience that can enhance their preparedness for the development of the digital economy and competition in the workplace. Thus, the implementation of project-based learning is a relevant strategy to improve the quality of learning while strengthening students' competencies in the fields of digital economics and business.

3. The Need to Strengthen Digital Business Competencies

One relevant learning approach in the Digital Economics course is project-based learning. Therefore, a needs analysis was conducted to identify students' needs for learning that provides real-world experiences through the implementation of digital business projects (Karneli et al., 2024). Aspects examined included students' interest in real-world projects, their desire to produce digital business products, and their direct involvement in business management (Drydakis, 2022). The results of the project-based learning needs analysis are shown in Table 3.

Tabel 3. The Need to Strengthen Digital Business Competencies

No	Statement on Strengthening Digital	Competencies
1	Requires Digital Marketing Competencies	94,6%
2	Marketplace Management	91,2%
3	Content Creator	89,8%
4	Digital Data Analysis	86,7%
5	Digital Entrepreneurship	94,8%
Average Requirements		91,42%

Based on the analysis of the questionnaire given to students, data showed that the need for strengthening digital business competencies was in the very high category, with an average percentage reaching 91.42%. This result indicates that students recognize the importance of mastering various digital business competencies as a preparation for facing the development of the digital economy and the demands of the increasingly technology-dependent workplace. This high level of need also indicates that students expect learning that is not only oriented towards mastering theory, but also able to develop practical skills relevant to the needs of today's digital industry.

The competency with the highest percentage was digital entrepreneurship, with a score of 94.8%. This finding indicates a significant need for students to understand and develop skills in creating, managing, and developing digital-based businesses. This high percentage reflects students' growing interest in the business opportunities offered by digital technology developments. Students recognize that digital entrepreneurship skills are a crucial competency for increasing competitiveness, creating jobs, and adapting to changes in the modern business environment.

Furthermore, digital marketing competency achieved a score of 94.6%, also in the very high category. These results indicate that students consider digital marketing skills to be a highly sought-after competency. In the era of digital transformation, marketing is no longer limited to conventional methods but has shifted to various digital platforms such as social media, search engines, marketplaces, and other digital applications. Therefore, students feel the need to master digital marketing strategies to effectively promote products or services and reach a wider market.

The marketplace management competency achieved a percentage of 91.2%. This result indicates a high need for students to understand business management through marketplace platforms. This competency encompasses the ability to manage an online store, organize products, serve customers, manage transactions, and utilize marketplace features to increase sales. The high demand for this competency indicates that students recognize the role of marketplaces as a key channel in today's digital business activities (Chodijah & Indah, 2026).

Meanwhile, the content creator competency achieved a percentage of 89.8%. This percentage indicates that students also need the ability to create creative, engaging, and informative digital content. Competence as a content creator is becoming increasingly important because digital content is a key

element in business marketing and communication strategies. Through mastery of this competency, students are expected to be able to produce various forms of content, such as videos, graphic designs, articles, and social media content that can support digital business development.

The digital data analysis competency achieved a percentage of 86.7%, which, although the lowest percentage compared to other competencies, remains in the high category. This indicates that students recognize the importance of collecting, processing, and analyzing digital data to support business decision-making. Data analysis competency is becoming increasingly relevant in the digital era because various business activities generate data that can be used to understand consumer behavior, evaluate marketing strategies, and improve business performance. Overall, the average need of 91.42% indicates that students have a very high need for strengthening digital business competencies. This finding indicates that learning development in the Digital Economy course needs to be directed at improving competencies that are in line with the needs of the industrial world and technological developments. Competencies such as digital marketing, marketplace management, content creation, digital data analysis, and digital entrepreneurship need to be systematically integrated into the learning process through an applied and experience-based approach. One relevant approach is Project-Based Learning (PjBL), because it allows students to develop digital business competencies through real-life projects that require the direct application of knowledge, skills, creativity, and problem-solving abilities. Thus, learning not only produces conceptual understanding, but also forms graduates who have digital competencies that are in line with the needs of the world of work and the business world in the digital economy era.

4. The Need to Use Technology in Learning

With the rapid development of digital technology, the learning process is required to integrate various digital devices and platforms relevant to the needs of the workplace and business world. In the context of the Digital Economics course, the use of technology serves not only as a learning medium but also as a means of developing students' digital business competencies. To identify students' needs for technology use in learning, an analysis of several technologies commonly used in digital business practices was conducted. The results of this analysis are presented in Table 4.

Table 4. Technology Needs in Digital Learning

NO	Statement on the Need for Technology in Learning	Persentase
1	Marketplace	92,8 %
2	Media Sosial Bisnis	96,7 %
3	Canva dan AI Tools	90,5 %
4	Google Analytics	86,5 %
5	Digital Payment	91,7%
Average about technology needs in learning		91,64%

Based on the results of the questionnaire analysis, students' need for the use of technology in learning is categorized as very high, with an average percentage of 91.64%. This result indicates that students desire a learning process that is integrated with various digital technologies relevant to current developments in the business and industrial world. This high demand reflects students' awareness that mastery of digital technology is a crucial competency to support successful learning and increase their readiness to face the world of work and entrepreneurship in the digital economy era.

The statement regarding the need to use business social media received the highest percentage, at 96.7%. This finding indicates that almost all students consider social media a very important technology to learn and use in the learning process. This high percentage is understandable, as social media has become a primary tool for digital marketing, business communications, and brand development. Students believe that mastering social media platforms such as Instagram, Facebook, TikTok, and other digital platforms will help them understand today's evolving digital business practices.

Furthermore, marketplace use achieved a percentage of 92.8%. This result indicates that students have a very high need to learn how to utilize marketplaces as part of their learning. Marketplaces are a digital transaction medium widely used by businesses to sell products and reach a wider consumer base. Therefore, students feel the need to gain hands-on experience in managing online stores, uploading products, managing transactions, and implementing marketing strategies through various available marketplace platforms.

Statements regarding the use of digital payments achieved a percentage of 91.7%. This figure indicates that students recognize the importance of understanding digital payment systems in modern business activities. The rapid development of non-cash transactions makes competent use of digital payments a necessary skill. Through learning that utilizes digital payment technology, students can understand electronic transaction mechanisms that are secure, efficient, and aligned with today's business needs.Kebutuhan penggunaan Canva dan AI Tools memperoleh persentase sebesar 90,5%. Hasil ini menunjukkan bahwa mahasiswa sangat membutuhkan pemanfaatan teknologi kreatif dan kecerdasan buatan dalam pembelajaran. Canva dapat digunakan untuk membuat berbagai desain promosi dan konten digital secara mudah, sedangkan AI Tools dapat membantu mahasiswa dalam melakukan analisis, pencarian informasi, pengembangan ide bisnis, hingga pembuatan konten. Tingginya persentase ini menunjukkan bahwa mahasiswa ingin memanfaatkan teknologi modern untuk meningkatkan produktivitas, kreativitas, dan efektivitas proses belajar.

Meanwhile, the use of Google Analytics achieved a percentage of 86.5%. Although this percentage is the lowest compared to other indicators, it remains in the high category. This indicates that students understand the importance of digital data analysis skills as a basis for business decision-making. Using Google Analytics in learning allows students to study user behavior, digital marketing effectiveness, and platform or website performance, thereby generating more accurate, data-driven business decisions.

Overall, the average percentage of 91.64% indicates that students have a very high need for technology integration in the learning process. This finding indicates that learning in Digital Economy courses needs to be designed to utilize various technologies that align with current digital business practices. The use of marketplaces, business social media, Canva and AI tools, Google Analytics, and digital payments can be a means to increase student engagement in learning while developing digital competencies needed in the workplace. Therefore, the implementation of a project-based learning model (PjBL) that integrates various digital technologies is highly relevant to support the optimal achievement of students' digital business competencies. With this approach, students not only learn concepts theoretically, but also gain real experience in utilizing technology to design, manage, and develop digital business activities (Rahayu et al., 2019).

DISCUSSION

The research results show that students have a very high need for the development of learning models for the Digital Economics course that are oriented towards strengthening digital business competencies. This finding is evident in the high percentages across all aspects studied, namely the need for innovative learning models (93.9%), the need for project-based learning (91.3%), the need to strengthen digital business competencies (91.42%), and the need to use technology in learning (91.64%). These findings indicate that students expect a learning process that is more relevant to technological developments, industry needs, and the demands of 21st-century competencies. According to the constructivist theory proposed by Jean Piaget and further developed by Lev Vygotsky, learning will be more meaningful when students actively construct knowledge through experience and interaction with the environment. In this perspective, students are no longer positioned as passive recipients of information, but rather as active subjects in building understanding. Therefore, students' high need for innovative learning models indicates that they desire learning that provides opportunities for active participation in the learning process (Rafik et al., 2022).

The high demand for innovative learning models, with an average percentage of 93.9%, indicates that students expect more engaging, interactive, and technology-based learning. These results align with the opinion of Joyce Weil and Marsha Weil, who stated that a learning model is a conceptual framework used as a guideline in designing learning experiences so that learning objectives can be achieved effectively. Innovative learning can increase student motivation, engagement, and learning outcomes because it provides a more meaningful learning experience than conventional learning.

The highest percentage of innovative learning models was found in the need for technology-based learning (98.7%). This finding demonstrates that students recognize the importance of technology as an integral part of the learning process. According to the digital learning theory proposed by Marc Prensky, the current generation of students is a group of digital natives who have grown up and developed in a digital technology environment. Therefore, the use of technology in learning is no longer merely a supplement, but a necessity that

must be met so that the learning process aligns with the characteristics of today's students.

In terms of project-based learning, this study showed an average demand of 91.3%. This result indicates that students desire a more applicable and contextual learning experience. This finding aligns with John Dewey's Project-Based Learning theory, which emphasizes the importance of learning through real-life experiences. Dewey argued that learning will be more effective if students are directly involved in activities related to real life. In the context of this study, students desire learning that allows them to produce digital business products and manage businesses directly, enabling them to connect theory with practice. Furthermore, the PjBL model is also supported by authentic learning theory, which states that students will more easily understand concepts when they face real-life problems and seek solutions independently or collaboratively. The high percentage of students seeking to produce digital business products (93.6%) indicates that students expect tangible outcomes from the learning process. The resulting products not only serve as evidence of mastery of the material but also serve as a means of developing creativity, innovation, and problem-solving skills.

The need to strengthen digital business competencies, which reached an average of 91.42%, indicates that students recognize the importance of mastering competencies relevant to digital transformation. Digital entrepreneurship (94.8%) and digital marketing (94.6%) competencies achieved the highest percentages. These results align with the competency theory proposed by Richard Boyatzis, which states that competencies are individual characteristics related to the ability to produce superior performance in a particular job or activity. In the digital economy era, competencies such as digital marketing, marketplace management, digital content creation, data analysis, and entrepreneurship are key skills that college graduates must possess. This finding is also supported by the concept of 21st-century competencies developed by the Partnership for 21st Century Learning. This concept emphasizes the importance of mastering critical thinking, creativity, communication, collaboration, information technology literacy, and digital literacy. The digital business competencies required by students in this study are part of the skills necessary to face the challenges of the increasingly digitalized modern workplace. In terms of technology use in learning, the average student demand reaches 91.64%. This shows that students want real technology integration in the learning process. According to the Technology Acceptance Model (TAM) developed by Fred Davis, someone will accept and use technology if it is considered useful (perceived usefulness) and easy to use (perceived ease of use). The high demand for using business social media (96.7%), marketplaces (92.8%), and digital payments (91.7%) indicates that students see these technologies as very beneficial in supporting digital business activities.

Furthermore, the demand for Canva and AI Tools (90.5%) indicates that students recognize the importance of utilizing creative technology and artificial intelligence in learning. This phenomenon aligns with educational developments in the Industrial Revolution 4.0 era, which demands the integration of digital

technology, automation, and artificial intelligence in various aspects of life, including education (Jalil & Shobrun, 2023). The use of AI in learning can help students increase productivity, creativity, and problem-solving skills more effectively. Overall, the results of this study demonstrate a strong link between the need for innovative learning models, project-based learning, strengthening digital business competencies, and the use of technology in learning. These findings support constructivism theory, experiential learning theory, competency theory, and technology acceptance theory, which emphasize the importance of active student involvement in contextual and technology-based learning processes.

Thus, the development of a digital business-based Project-Based Learning (PjBL) model is highly relevant for application in Digital Economy courses (Nurhamidah & Nurachadijat, 2023). This model is able to integrate active learning, real-life projects, strengthening digital business competencies, and utilizing modern technology in a single learning process (Hilmayah, 2025). Through the application of this model, students not only gain conceptual understanding but also develop practical skills, creativity, critical thinking skills, and readiness to face the world of work and business in the digital economy era. These findings also reinforce the urgency of developing a PjBL learning model as a learning innovation that is tailored to student needs and the demands of modern developments (Anita, 2015).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the research results and discussion, it can be concluded that students in the Faculty of Economics and Business have a very high need for the development of a learning model for the Digital Economics course that can strengthen digital business competencies. The needs analysis results indicate that all aspects studied are in the very high category, namely the need for innovative learning models (93.9%), the need for project-based learning (91.3%), the need for strengthening digital business competencies (91.42%), and the need for the use of technology in learning (91.64%).

Regarding innovative learning models, students desire a more engaging learning process, more practical activities, and the integration of digital technology into learning. These findings indicate that conventional lecturer-centered learning is not fully able to meet students' needs in facing the demands of learning in the digital era (Ariyanto, Andy; Sutama, 2022). In the project-based learning aspect, students demonstrated a very high interest in learning through real-life projects, producing digital business products, and managing businesses directly. These results indicate that students require contextual and applicable learning experiences that enable them to directly connect theory with practice.

Furthermore, in terms of strengthening digital business competencies, the competencies most needed by students are digital entrepreneurship (94.8%), digital marketing (94.6%), marketplace management (91.2%), content creation (89.8%), and digital data analysis (86.7%). These findings indicate that students recognize the importance of mastering digital business competencies as a preparation for facing the development of the digital economy and an

increasingly technology-based world of work. Regarding the use of technology in learning, students expect the integration of various digital technologies such as business social media (96.7%), marketplaces (92.8%), digital payments (91.7%), Canva and AI Tools (90.5%), and Google Analytics (86.5%). These results indicate that students need learning that utilizes technology relevant to current digital business practices.

Theoretically, the results of this study support the theories of constructivism, experiential learning, and Project-Based Learning (PjBL), which emphasize the importance of active student involvement in building knowledge through real-life experiences. The research findings are also in line with the demands of 21st-century competencies that emphasize mastery of digital skills, creativity, collaboration, communication, and problem-solving. Thus, this study concludes that the development of a Digital Economy learning model based on Project-Based Learning (PjBL) integrated with digital technology is essential to strengthen students' digital business competencies. This learning model is considered capable of accommodating students' needs for innovative, project-based learning, oriented towards strengthening digital business competencies, and optimally utilizing digital technology. Therefore, the development and implementation of a digital business-based PjBL model are expected to improve the quality of learning while producing competent, creative, adaptive graduates who are ready to face the challenges of the world of work and entrepreneurship in the digital economy era.

Recommendation

Based on the research results and conclusions obtained, several recommendations that can be given are as follows:

1. For Lecturers Teaching Digital Economy Courses: Lecturers are advised to develop and implement more innovative, interactive, and student-centered learning models. Learning should be designed to focus not only on delivering theory but also on providing authentic learning experiences through practical activities and real-life projects. Furthermore, lecturers should integrate various digital technologies such as marketplaces, business social media, Canva, AI tools, Google Analytics, and digital payments into the learning process so that students gain experience that aligns with the needs of the workforce and the digital industry.
2. For Study Programs and Faculties: Study programs and faculties need to support the development of a curriculum that is more adaptive to the development of the digital economy and industry needs. Digital Economy courses should be directed at strengthening competencies in digital marketing, marketplace management, content creation, digital data analysis, and digital entrepreneurship. Support in the form of technological facilities and infrastructure, digital business laboratories, and training for lecturers is also needed to support the optimal implementation of project-based learning.
3. For Students: Students are expected to be more active in developing digital business competencies through involvement in digital business projects, training, certifications, and technology-based entrepreneurial activities.

Students also need to improve their skills in utilizing various digital platforms and the latest technology to be highly competitive in the workplace and in creating independent digital-based businesses.

4. For Learning Model Developers: The results of this research can serve as a basis for developing a digital business-based Project-Based Learning (PjBL) model that aligns with the characteristics of students in the Faculty of Economics and Business. The developed model should integrate real-life business projects, the use of digital technology, the strengthening of digital business competencies, and evaluation mechanisms oriented towards the learning process and product.
5. For Universities: Universities need to strengthen the digital learning ecosystem by providing adequate technological infrastructure, access to various digital platforms, and collaboration with businesses and industry. This collaboration can provide students with opportunities for more authentic learning experiences through internships, collaborative projects, and digital business incubations.

Provide some conclusions and implementation of the research results.

ADVANCED RESEARCH

1. This study, which focuses on analyzing student needs related to the Project-Based Learning (PjBL)-based learning model for digital economics courses to strengthen students' digital business competencies, presents several limitations that must be considered when interpreting the results. First, this study only involved students from a specific study program, so the results cannot be generalized to all students at other universities with different characteristics, curricula, and learning environments.
2. This study used a survey method with a questionnaire as the primary data collection tool. The data obtained are highly dependent on the respondents' perceptions, understanding, and honesty in providing answers, thus potentially subjectivist bias.
3. This study focused solely on analyzing student needs for the development of a Project-Based Learning (PjBL)-based learning model and did not implement or test the model's effectiveness in improving students' digital business competencies. Therefore, this study cannot provide empirical evidence regarding the impact of implementing the PjBL model on student learning outcomes or competencies.
4. The aspects analyzed in this study were limited to student needs for the learning model, including materials, methods, media, evaluation, and project activities. Other factors that also influence the success of PjBL implementation, such as lecturer competence, technological infrastructure readiness, institutional support, and collaboration with the business and industrial world, have not been studied in depth.

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