

Web-Based Business Simulation Practice Course Learning Application

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Abstract: This research is planned to continue and realize the results and objectives of previous research in 2022 with applied research on innovative products, namely Practical Learning Applications for Virtual Business Simulation Courses in the Business Administration Study Program. The long-term goal of this research is to develop project-based and digital technology-based Business Simulation learning courses used by students and lecturers. The method used to achieve this is the R and D method. The target for this research output is Copyright and publication of the accredited national journal Sinta 2. This research produces a virtual business simulation learning application based on a research model that was created in 2022. Research This is a type of action research and development using the Research and Development (R&D) method. This research also tested innovative products practiced by 70 5th-semester students, 10 people were taken from each 5th-semester class of the Business Administration Study Program (7 classes) as test respondents in using this Business Simulation application. The Business Simulation Application was created under the business simulation learning process contained in the RPS for the Business Simulation Course. This simulation application is web-based and is equipped with a video tutorial to make it easier to use. Application testing results show that this business simulation application makes business work easier and faster for the positions of manager, head of administrative supplies, and head of finance.

Keywords: Learning Applications; Virtual Business Simulation; Web-based

Introduction

The Business Administration Program has its objectives outlined in the vision and mission of the Business Administration Study Program, namely advancing education in the field of business administration to produce professional vocational business administration personnel. To support achieving the vision and mission of the Business Administration study program, this study program is supported by a curriculum that is applied to the teaching and learning process. The curriculum for this study

program is grouped into core courses (mainstream) and supporting courses (Strogilos et al., 2023; Shodiq & Asyafah, 2020). Core courses are intended to be courses that lead to equipping students to become ready-to-use workforce (Li, 2022; Ng et al., 2023). One of the core courses in the Business Administration study program is Business Simulation.

The business simulation course is given in semester 5 and this course is a summary of student learning from semesters 1 to 4 including secretarial courses, secretarial projects, accounting, communication, ethics, human resources, business

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computer applications, entrepreneurship, etc. This Business Simulation course is carried out in the Business Administration Department's business simulation office laboratory (Peterková et al., 2022). Students in the learning process were divided into 6 groups representing 6 companies consisting of 3 department stores and 3 agents. Besides that, some students work in banks (Dwivedi et al., 2023; Darling-Hammond et al., 2020). In each department store, 4 students act as manager, secretary, finance and control department. In each agent, 4 students act as manager, secretary, finance, and control department.

Lecturers act as initial consumers and also act as producers. In carrying out its business flow, consumers order goods from department stores and the department store replies to the order letter by sending the goods order to the consumer. Department stores order goods from agents and agents also send orders to department stores. Next, the agent orders goods from the manufacturer and the producer sends the goods order to the agent. That is an example of a business flow carried out face-to-face in the Business Simulation laboratory (Jerman Blažič & Novak, 2015; Tomaskova et al., 2019; Price-Howard & Lewis, 2023). Every company creates documents that must be in their company, such as agendas for incoming and outgoing letters, attendance lists, salary lists, memos, and so on. In this course, many things were found that were inefficient and ineffective, for example using a lot of paper to do assignments, whether it be correspondence between companies or documents done at each company, taking too long to do assignments because they often repeated errors occur.

In line with the development of increasingly sophisticated technology and adapting to the world of work that has adopted the digital era, business simulation learning must adapt to the use of technology and this is in line with carrying out work in general digitally in the industrial world. This research was conducted to facilitate the learning process so that lecturers are no longer involved in the business processes carried out practically in this course. Apart from that, this research creates students' ability to carry out business transactions online. In this digital era, many companies carry out transactions or business processes online (Kraus et al., 2021; Mufadhhol et al., 2022; Verhoef et al., 2021). Therefore, researchers designed this business simulation learning process using digital technology. The results of this research are expected to create digital business practice skills and competencies in business simulation learning, hereinafter referred to as virtual business simulation learning.

In this virtual business simulation learning, business simulation practice is carried out virtually in the form of transactions carried out with applications created for the business simulation courses used as

stated in the RPS. Therefore, this research was conducted to create a virtual business simulation application or program that is used by students in learning business simulation courses. Furthermore, the results of this research were tested on the product by Business Administration Study Program students. Therefore, the researcher formulated a problem formulation, namely: Can this virtual business simulation learning application be used as a business simulation learning medium by students of the Business Administration Study Program and does the use of this virtual business simulation application make it easier for students in the technology-based business simulation learning process?.

Method

This research is a type of action research and development using the Research and Development (R&D) method. In the development research method, 10 stages are used, namely: potential problems, data collection, product design, design validation, design revision, product trial, product revision, product trial, 9) product revision, and 10) analysis and reporting (Sarpong et al., 2023).

The Virtual Business Simulation Learning Application planned as the output of this research panel can be described below:

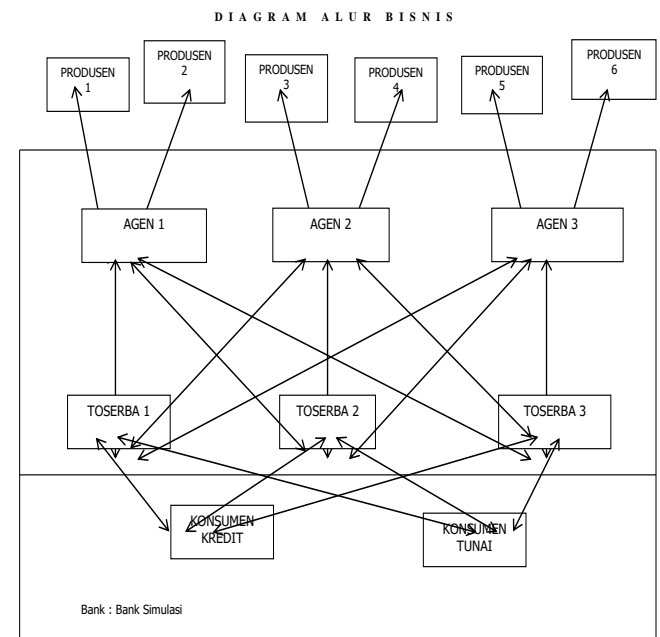


Figure 1. Business Simulation Process of Making Transactions (Source: Business Administration Study Program, 2022)

This research collects data using a questionnaire technique that is given to students as a response or perception of the virtual business simulation application

product test used by students of the 5th-semester Business Administration Study Program. The results of the application test validation sheet and student responses are known for the feasibility of the application that has been created. To analyze validator answers and student responses, researchers used descriptive statistics of rating results which are described as follows:

Table 1. Measurement of Research Results

Application Validation	Student Response	Interpretation (%)	Value Weight
Very good	Very interesting	81-100	5
Very good	Very interesting	61-80	4
Good	Interesting	41-60	3
Not good	Less attractive	21-40	2
Not good	Not attractive	0-20	1

Observation

Researchers made observations on the use of applications that will be used by lecturers and students in practical business simulation learning. Product Testing for Business Simulation Applications also involves assistants designing computer information systems for business simulation applications as assessors for product tests. This research took 70 students in the 5th semester of the Business Administration Study Program who had studied the Business Simulation course as participants in the trial of this business simulation application. If the results of the assessment of the use of this application product still do not meet the standard dimensions according to the research objectives, then the application product is revised and tested again so that finally a product is produced that is suitable for use.

Bibliography

This research uses documents and references as references in the product creation process and also product testing to produce a business simulation learning application that is used in the learning process.

Data analysis

Researchers will look for the highest number of scores for aspects of learning applications, namely: Determine the number of respondents x the weight of the highest score in the quantitative assessment x the number of assessment indicators. The assessment formula is Number of Highest Values of Application Aspects $n \times i_{max}$, where n = several validators, i_{max} = weight of the highest value of the qualitative assessment; Determines the number of validator answers. The determination is to multiply the number of validators in each qualitative assessment by the weight of the value,

and then add up all the results. The formula used can be seen in the following equation: Number of application aspect values:

$$\sum_{i=0}^4 = n_i \times i \tag{1}$$

Note: n_i = number of respondents who chose Value I = weight of quantitative assessment value (0-4); Rating results (HR), after adding up the answers to the application aspect values, the next step is to determine the results using a formula that can be seen at:

$$HR = \sum_{i=0}^4 = \frac{n_i \times i}{n_i \times i_{max}} \tag{2}$$

The formula above can also be carried out using frequency analysis, namely the highest value to the lowest value. Interpretation of data processing measurement results has been explained above.

Result and Discussion

This research produces web-based computer software that is used in business simulation learning in the 5th-semester Business Administration study program. This Business Simulation Learning Application changes the manual or offline business simulation learning process to an online digital-based one. Every student who studies this business simulation course uses this application to simulate real business transactions carried out in the industry as they are employees of the company. This application is used by first creating an account on each computer used by students. So every student has to use a computer or laptop as they work in a business company. This application is installed on the Medan State Polytechnic website or the website of the Business Administration Department of the Business Administration study program.

The application is still being tested by researchers by just making steps to use it and will produce a manual or guide for using it. Briefly, the steps for using this learning application are explained below: How to Use a Business Simulation Web-Based Application.

First, please log in using the email and password you created previously



Figure 2. Business Simulation Application Login Display

If you don't have an account, please click Create account

In the creditor ledger section, the balance will automatically be calculated when we create the data entry

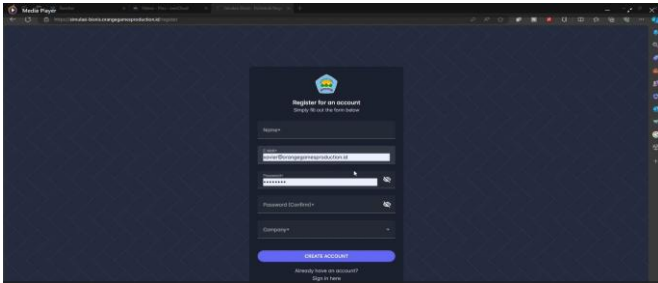


Figure 3. Display of Creating a Business Simulation Application Account

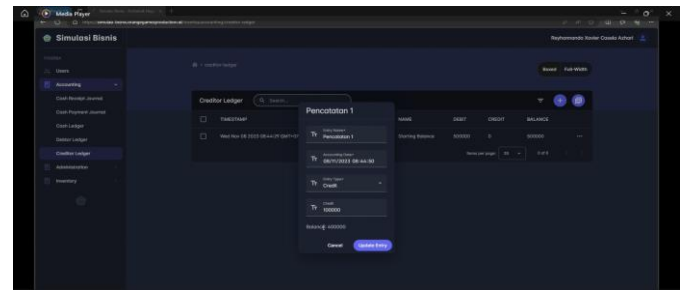


Figure 7. Role Creditor Ledger Display

For new users, the display will be blank because the account role is determined by the lecturer

For all journals, we can generate them in PDF

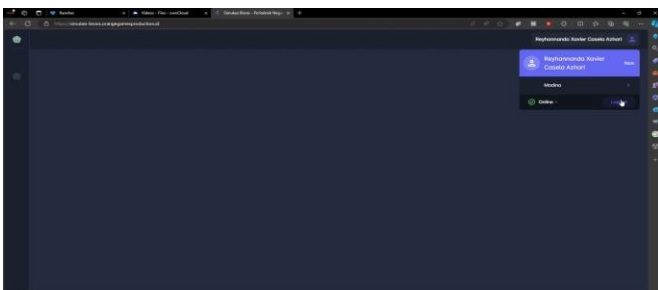


Figure 4. Display of Creating a Lecturer Account for the Business Simulation Application

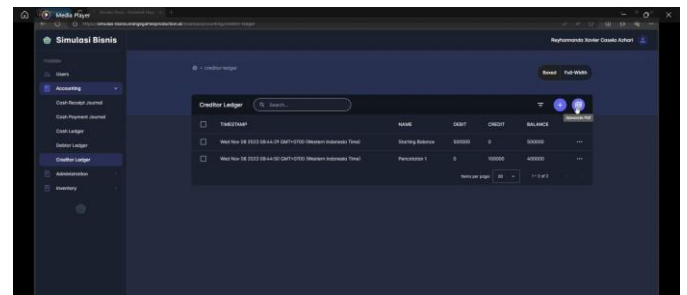


Figure 8. Generated Journal Display

After confirmation by the lecturer, the appearance of the student's account will change according to the specified role

In the inventory check section, we can see product inventory records

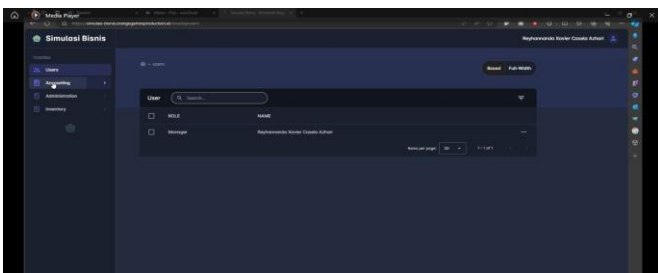


Figure 5. Display of Student Accounts in the Business Simulation Application

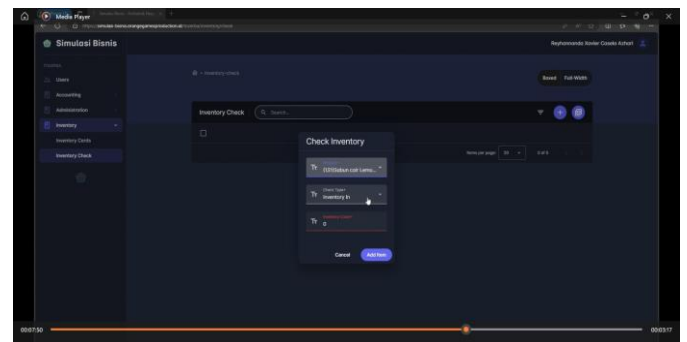


Figure 9. Role Inventory View

Each different role will have different features according to the role. Especially role managers, you will be able to access all features

The data for each role is automatically synchronized, so updates to one role that is related to other roles will automatically change

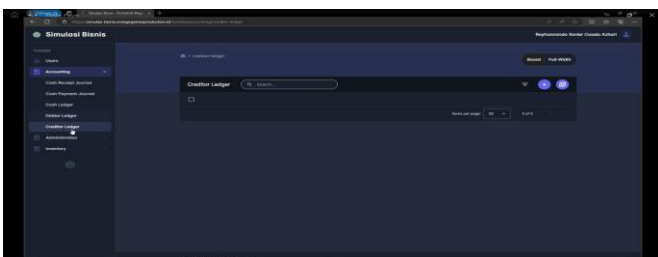


Figure 6. Business Simulation Application Manager Role View

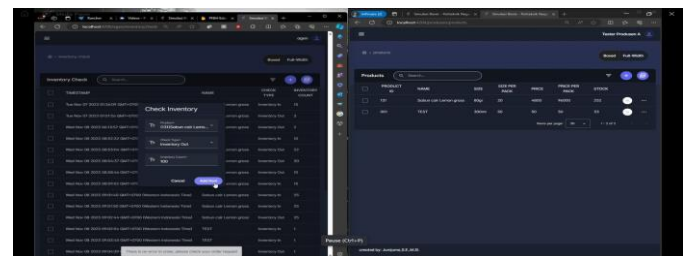


Figure 10. Role Synchronization Display

All data can be generated in PDF

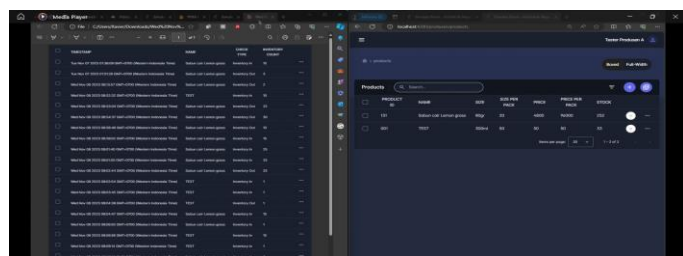


Figure 11. Generated Business Data Display

Trial of the Business Simulation Learning Application

The Business Simulation Learning Application was tested by 5th-semester students of the Business

Administration Study Program who were studying the Business Simulation course, making it easier for researchers and instructors to provide training or tutorials on the use of this application. After 4 hours of research respondents, namely 70 5th semester students of the Business Administration Study Program, received teaching and tutorials, the researchers distributed questionnaires to get responses on the use of this application. Next, the researcher recapitulated the results of filling out the questionnaire. The results of student answers were processed using frequency analysis and the results can be seen in Table 2.

Table 2. Recapitulation of Questionnaire Data Results

Question	Variable	1	2	3	4	5	Likert Scale
The appearance of the business simulation application is attractive	APSB1			16	28	26	
The features in the business simulation application are by the agent and department store instructions in the module	APSB2	1		19	33	17	
The steps for carrying out business transactions in the application can be carried out according to the module	APSB3		1	23	35	11	
Notification of business simulation course assignments from lecturers to students via virtual business simulation applications is easier	APSB4		4	16	28	22	
Carrying out business tasks according to agent and department store instructions developed from manual methods	APSB5		1	18	28	23	
The time duration used in the simulated business process is shorter than the manual method.	APSB6		5	3	34	28	
The business transaction process in the business simulation uses this application compared to manually	APSB7		4	12	34	20	
There is clearer notification of business simulation course assignments through business simulation applications to students	APSB8		4	7	36	23	
This business simulation application is by business processes in the real world of work	APSB9			21	25	24	
Business simulation applications follow technological developments	APSB10			12	26	32	
Viewed from a quality perspective, is the learning process for business simulation courses using virtual business simulation applications effective and efficient?	APSB11			11	29	30	
The images in the business simulation application for delivering business simulation material are very helpful	APSB12			14	32	24	

The results of testing the virtual business simulation application, which can be seen in Table 2 above, show that students responded to the use of the virtual business simulation application that had been previously trained. Students respond or answer a questionnaire with a total of 12 questions. The questionnaire answers consist of 5 answers, namely number 1 is not attractive, 2 is not attractive, 3 is neutral, 4 is interesting, and 5 is very interesting. The results of

student answers can be explained as follows: The appearance of the business simulation application is attractive 26 students who answered this question said it was very interesting and 28 people said it was interesting. This means the appearance of this application is attractive; The features in the business simulation application are by the agent and department store instructions in the module. 17 students who

answered this question said it was very good and 33 people said it was good.

This means that the features of the business simulation application are by the agent and department store instructions in the module so this application is suitable for use in this business simulation course because it is by the offline business simulation learning instructions; The steps for carrying out business transactions in the application can be carried out according to the module 11 students who answered this question said it was very good and 35 people said it was good (Lusardi, 2019). This means that the steps for carrying out business transactions in the application can be carried out according to the offline business simulation course module (Beerepoot et al., 2023); Notification of business simulation course assignments from lecturers to students via virtual business simulation applications is easier 22 students who answered this question said it was very good and 28 people said it was good.

This means that notification of business simulation course assignments from lecturers to students via virtual business simulation applications can be done well and more easily as is done in offline learning (Zulfiqar et al., 2021; Haleem et al., 2022). Carry out business tasks according to agent and department store instructions, developing from manual methods. 23 students who answered this question said it was very good and 28 people said it was good. This means that business tasks according to agent and department store instructions can be carried out from manual methods; The time duration used in the simulated business process is shorter than the manual method. 28 students who answered this question said it was very good and 34 people said it was good.

This means that the duration of time used in the simulated business process is shorter than the manual method so that carrying out tasks can be done more quickly (Reijers, 2021). The business transaction process in business simulations using this application is easier than manually 20 students who answered this question said it was very good and 34 people said it was good. This means that the business transaction process in the business simulation using this application is better than manually; There is clearer notification of business simulation course assignments through business simulation applications to students (Hsu & Wu, 2023). 23 students who answered this question said it was very good and 36 people said it was good. This means clearer notification of business simulation course assignments through business simulation applications to students (Fronza et al., 2023; Gatti et al., 2019); This business simulation application is by business processes in the real world of work. 24 students who answered this

question said it was very good and 25 people said it was good.

This means that this business simulation application is by business processes in the real world of work (Binsztok et al., 2022). Business simulation applications follow developments in digital technology (Loffler et al., 2018; Bock et al., 2021). 32 students who answered this question said it was very good and 26 people said it was good. This means that business simulation applications follow developments in digital technology; Viewed from a quality perspective, the elearning process for business simulation courses using virtual business simulation applications is effective and efficient. 30 students who answered this question said it was very good and 29 people said it was good. This means that the learning process for business simulation courses uses virtual business simulation applications effectively and efficiently so that the quality is better (Campos et al., 2020; Vlachopoulos & Makri, 2017). Images in business simulation applications for delivering business simulation material are very helpful (Koltai & Tamás, 2022; Joella et al., 2020). 24 students who answered this question said it was very good and 32 people said it was good.

This means that the images in the business simulation application for delivering business simulation material are very helpful so that tasks can be carried out more easily (Ferreira et al., 2021). From the answers given by students, in general, it can be seen that the majority of students answered very interestingly and that the use of virtual business simulation applications provides the benefit of completing business simulation tasks more quickly and effectively compared to using business simulations. Manually. However, this research has weaknesses in the view of future researchers so that this research can be completed better. From the results of the questionnaire above from question number 1, it was explained by the students that the appearance of this virtual business simulation application was interesting to use in the learning process.

Furthermore, from questions 2, 3, 5, and 9, students stated that this virtual business simulation application was suitable for the offline or manual business simulation learning process. Then from questions 4, 7, and 12, students stated that using virtual business simulation applications in the learning process for business simulation courses is easier and very helpful in carrying out manual or offline learning for business simulation courses. Meanwhile, from questions 6, 8, and 11, respondents (students) stated that using this virtual business simulation application is more effective and efficient because it is faster to complete assignments in business simulation courses and does not use paper or other office supplies and equipment commonly used in offline business simulation learning (not using paper,

folders, filing cabinets, orders, forms). The use of virtual business simulation applications was also stated by students to develop business simulation learning media that is offline using manual tools and equipment based on digital technology.

Conclusion

This virtual business simulation learning application using digital technology can be used well by students of the Business Administration Study Program, supported by tutorials on using the application. Using this virtual business simulation application makes it easier for students in the business simulation learning process as a digital technology-based learning medium.

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Author Contributions

Conceptualization, J., A. M. S., E. S., L. M. N., F. R. S.; methodology, J.; validation, A. M. S. and E. S. formal analysis, L. M. N.; investigation, F. R. S., and J.; resources, A. M. S and E. S; data curation, L. M. N.: writing—original draft preparation, F. R. S and J.; writing—review and editing, A. M. S.: visualization, E. S and L. M. N. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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