Implementation Of Information Planning and Strategies Industrial Technology 4.0 to Improve Business Intelligence Performance on Official Site APTISI

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Abstract. The Association of Indonesian Private Universities or often called APTISI, has a membership of 4189. Compared to State Universities that only have 372, of course the presence of PTS is definitely a solution amid the lack of equalization of higher education in Indonesia. However, with the existence of problems in improving the quality of education, APTISI as the Association of Indonesian Private Higher Education should be able to make PTS more competitive in all fields, especially the field of information and technology planning strategy (BSPIT) in the current disruption era. In this study, identified at least 3 (three) problems faced. An alternative solution to the problem is to apply the APTISI official site to show the performance of the association's activities. 5 (five) literature reviews on Industrial Technology 4.0, Business Intelligence and Dashboard were conducted to determine the level of APTISI's activities in the current disruption era. In designing the system, there are 3 (three) benefits found from a problem formula using the SWOT analysis method. From what has been explained above, the APTISI official site 4.0 industry technologies can disseminate information and improve the performance of APTISI members in the dissemination of information and activities by conducting a validity and reliability test for 100 (one hundred) respondents.

1. Introduction

UU no. 20 of 2003 article 1 point 1, education is a conscious and planned effort to realize the learning atmosphere and learning process so that students actively develop their potential [1]. Where the potential possessed by students depends on the sources obtained by them. The stronger and better the quality of higher education, the greater the potential influence of the human resources produced. For this reason, the government together with higher education institutions and associations should collaborate in empowering superior universities, especially in private universities in Indonesia [2].

The Higher Education Law guarantees the autonomy of universities, both in the academic and non-academic fields [3]. Santosa (2009) said that associations were people who gather to form social units, or units interact with each other, have awareness as social units and solidarity, form a system of living together that "performs an activity" to achieve certain goals and produce culture [4].

Closely related to the Association of Indonesian Private Universities (APTISI) is currently assisting the government in improving the quality of education through private universities in Indonesia.
Competition between State Universities and Private Universities, universities must improve quality in all fields. It has a significant continuity towards the industrial era 4.0 or commonly called the era of disruption (disruptive innovation) [5]. There are three ways to anticipate the emergence of disruptive innovation. First, universities must always monitor the emergence of new technologies. Second, monitor the direction of technological developments currently underway. Third, create a separate business unit to optimize new technologies that have been recognized [6].

The spearhead of the success of an association is the many contributions that synergize in building a goal, vision, and mission. The existence of a dashboard in supporting Business Intelligence becomes an end result that wants to be fulfilled so that it can increase high productivity in an association.

2. Problems
Based on the description in the background above, then three problem formulas can be drawn. The existing container cannot be able to collect and coordinate activities throughout Indonesia because the official site aptisi.org is not updated and cannot display ongoing activities.

The existing container cannot display the user's overall activity, in this case closely related to the activity dashboard to support business intelligence performance. As well as the last whether the website transformation aptisi can be in line with industry-based technology 4.0 that adopts business intelligence. From the existing problems, there are three objectives of this study. First, creating an association of Indonesian private universities that have a place to collect and coordinate activities throughout Indonesia because the official site aptisi.org is not updated and cannot display ongoing activities.

3. Literature Review
1. The research conducted by Untung Rahardja, Qurotul Aini, and Neng Enay in 2017 entitled "Optimizing the Dashboard on the Student Examination Assessment System as Higher Education Information Media" 1. In this study describes one of the value input systems conducted by lecturers online, namely the PEN + (Penilaian Plus) system and students receive personal value information via e-mail without knowing the highest value information and the lowest value in their class even though this is very necessary to remember at Raharja College using a standard deviation assessment long before the PEN + system, students can find out the information on the overall value of one class and the highest and lowest value but with manual and inefficient procedures. The method used...
is a method of analysis on the system, interviews with related parties, observations in universities, design methods and the last is to use an implementation method in the PEN + system. Once implemented on the PEN + system there is a dashboard that conveys information on the overall value of one class and students can find out what is the highest and least value in the class online and of course efficient [7].

2. Research conducted by Bozena Chovancova, Michaela Dorocakova, and Viera Malacka in 2018 from the Prague Development Center entitled "Changes in industrial structure of GDP and stock indices with regard to the Industry 4.0". This study uses the calculation of GDP, with the variable $r$ = correlation coefficient value; $R_{GDP_t} =$ Change YOY from US GDP at time t measured quarterly; $R_{S & Pt - 3} =$ changes in the S & P 500 index at time t = 3 measured quarterly; $\Sigma (R_{GDP_t} * R_{S & Pt - 3}) =$ number of products of two characteristics $R_{GDP_t}$; $R_{S & Pt - 3}$; n = number of observations; $\bar{R}_{GDP_t}$; $\bar{R}_{S & Pt - 3} =$ average value for $R_{GDP_t}$; $R_{S & Pt - 3}$ respectively; SD ($R_{GDP_t}$) and SD ($R_{S & Pt - 3}$) = standard deviations respectively. The results of this study the emergence of industry 4.0 have resulted in significant changes in the GDP industry sector, especially in the use of computers. [8]

3. Research conducted by Josef Basl of Westbothemian University Plisen Czech Republic in 2018 entitled "Companies on the way to industry 4.0 and their Readiness." This study explains how to measure and evaluate the readiness of national companies in the industrial era 4.0. For example the German reference model for 4.0 Industry is known as RAMI 4.0. This national evaluation is interesting because it refers to the general preconditions for digitizing a country and its readiness for innovation, which is equally important for the development of Industry 4.0. By using the readlines index: NRI (Networked Readiness Index), GCI (Global Competitive Index) and Score from the OECD Scoreboard. [9]

4. Research conducted by Mihyun Chung and Jaehyoun Kim from South Korea in 2016 with the title "The Internet Information and Technology Research Directions based on the Fourth Industrial Revolution." This study describes four stages of the industrial revolution that began in the 20th century, leading to the 4th stage industry as a combination of the previous industrial revolution combining physical systems and cyber systems and introducing cyber-physical systems as intelligent network systems. [10]

4. Troubleshooting
The frame of mind in this study are as follows:

![Mind Framework](image)

**Figure 3. Mind Framework**

APTISI's framework of thought that has been compiled in the picture above is the information needed to compile or solve problems in this study that can explain the current conditions that are running, APTISI's foundation up to the desired goal to be able to propose the application of information and technology planning and industrial technology 4.0 on APTISI's official site with an ideal goal so that it can have an impact in improving the business intelligence performance of association activities [11]. This study uses a qualitative approach with descriptive methods [12]. Where the descriptive method is a problem solving procedure by describing the object of research at the present state based on the facts as they are, then analyzed and interpreted in the form of a survey [13]. Survey research with the object
of research conducted on large and small populations, but the data studied is data from samples taken from the population [14]. APTISI's sample collection uses "Simple Random Sampling" because the taking of sample members from the population is done randomly without regard to the levels in the population. The total number of sample members is determined by the Slovin formula, while the formula is as follows:

\[
n = \frac{N}{1 + NE^2}
\]

Description:
- \(n\) = Sample
- \(N\) = Population
- \(e\) = Critical value or desired accuracy limit (in this study 10% selected)

Based on the population, the calculation of the number of samples taken for this study is as follows:

**Private University Data**

\[
n = \frac{4189}{1 + 4189 \cdot (0.1)^2}
\]

\[
n = \frac{4189}{419,9}
\]

\[
n = \frac{4189}{42,9}
\]

\[
n = 97.6 \text{ (dibulatkan menjadi 100)}
\]

\[
n = 100
\]

In this study sampling using Simple Random Sampling, amounting to 100 members, students and APTISI academics who will be sampled. With this research is carried out with the presence of 30 instrument questions that will test the benefits of the application of industrial technology 4.0 on the APTISI Official Site based on business intelligence for APTISI members, students and academics. By using P1 indicator as Statement 1 to P30 as Statement 30 which will be tested using validity and reliability testing.

### 4.1. Validity Test

**Table 1. r Table**

| df = (N-2) | Significance level for one-way tests |
|-----------|-----------------------------------|
|           | 0.05 | 0.025 | 0.01 | 0.005 | 0.0005 |
| 98        | 0.1654 | 0.1966 | 0.2324 | 0.2565 | 0.3242 |

Description \(r_{hitung}\) value > \(r_{tabel}\) is \(df = 100-2 = 98\). So the instrument is said to be valid if \(r_{Total} > r_{Tabel}\). Where the \(r_{tabel}\) value of the 2-way significance level 0.05 \(r_{tabel}\) value for \(df 98 = 0.1966\) [15].

**Table 2. Results of Analysis of Instrument Items Application of Official Site APTISI**
Data validity test results for Application of industry technology 4.0 in the Official Site APTISI based on business intelligence shows that all of the above statement instrument items are valid as many as 30 statement instruments.

4.2. Reliability Test

Table 3. Results of Reliability Analysis Item Instrument for Application of Official Site APTISI (Item-Total Statistics)

Analysis of the statistical reliability table variable application of industrial technology 4.0 in the Official Site APTISI based on business intelligence on the reliability tests output it is known that, cronbach's alpha is 0.956 > 0.6, the research instrument is declared reliably [16].

5. Implementation

APTISI's official site in line with industry 4.0 based on Business Intelligence [17] has very informative properties that make it easier for members and the general public to search for information, both about the activities of APTISI members, invitations to APTISI members, to news updates about PTS [18]. Only by visiting http://aptisi.or.id/, there is no need to log in, you have got various informations available on the website [19].

The following is three main features of the APTISI website that make it easier for users to view the post update statistics on the website:
a. **Display Statistic Most Viewed Articles**

![Figure 4. Display of the Most Viewed Article Statistics](image)

b. **Display of User Activity Statistics**

![Figure 5. Display of User Activity Statistics](image)

c. **Display of the Most Commented Article Statistics**

![Figure 6. Statistics of the Most Commented Articles](image)

### 6. Conclusion

Indonesian private universities associations have a place to collect and coordinate activities throughout the archipelago. Where currently APTISI (Association of Indonesian Private Universities) has a place to collect and coordinate activities throughout the archipelago. If the previous container (aptisi.org) is no longer active. So, with the existence of a new container (aptisi.or.id) it can facilitate members to collect and coordinate activities throughout Indonesia. The existing container can display the user's overall activity. If the previous container cannot display the user's overall activity. At present, the container is aptisi.or.id all members even visitors can find out the activities of users or members in the aptisi.or.id container on business intelligence in aptisi.or.id. The transformation of the aptisi.or.id website will be in line with the 4.0 industrial technologies based on Business Intelligence. With the aptisi.or.id container, data and information about APTISI can be processed into a dashboard located on the aptisi.or.id pages. This is also in line with industrial technology 4.0 which has ruled out the use of paper and empowered community technology within the scope of APTISI. Therefore, the existence of aptisi.or.id is expected to minimize information dissemination conventionally and make information more easily and quickly presented. This has been proven by the testing using statistics on the application of industrial technology 4.0 on the official site APTISI based on business intelligence by submitting 30 questions that are declared valid and reliable.

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