

# Optimization Of Data Mining In Predicting Tourist Visits At The Deli Serdang Museum

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## ABSTRACT

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The PKM Programme aims to increase tourism and promotional media even in the midst of the Covid-19 pandemic by using information technology, particularly data mining, to help Deli Museum employees forecast the number of visitors to the museum. The information gathered from this process can then be utilised to inform policy decisions. The information that is produced can be innovatively and creatively used to implement commercial strategies that will boost public interest in and passion for visiting the Deli Serdang museum. As the first step in putting this PKM programme activity into practice, the team in the present Community Service programme teaches students how to retrieve and gather data at the Deli Serdang Museum in addition to teaching them how to use technology, particularly the Data Mining application. The Deli Serdang Youth, Sports, Culture and Tourism Department is the program's target audience, with a focus on museum staff in particular. The team evaluated the participants' ability to accept and assimilate the material by giving them tests at the end of the PKM series. This allowed the team to determine how well the participants understood the material.

**Keywords:** Community Service Program, Data Mining, Deli Serdang Museum, Predicting

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## 1. INTRODUCTION

The Deli Serdang Regional Museum or commonly called the Deli Serdang Museum is a historical and cultural museum located at the government office complex, Tanjung Garbus I Village, Lubuk Pakam, Deli Serdang, North Sumatra. The aim of establishing the museum is to record the history of Deli Serdang and as an effort to introduce this culture and history to the public. The museum was founded in 2001, but its inauguration took place on August 12 2003. Funds for the construction of the museum were used from the Regional Revenue and Expenditure Budget (APBD)[1]. Since its inauguration, this museum has been under the auspices of the Department of Youth, Sports, Culture and Tourism of Deli Serdang Regency. In 2016, the Deli Serdang district government built a new museum after receiving funding assistance for Museum Construction from the Ministry of Education and Culture through the Directorate of Cultural Heritage and Museum Preservation, Directorate General of Culture. The new museum was built on the land of the former Deliserdang District Government Agriculture Service. The new museum was inaugurated on September 8 2018.

The arrival of the Covid-19 pandemic resulted in a decline in all aspects of life, especially in the tourism aspect or sector. Almost all tourism objects experienced a decline and even closed, including the Deli Serdang Museum, North Sumatra. The New Normal period in the midst of the pandemic, the Deli Serdang museum must be able to innovate and make breakthroughs and changes to continue to exist, the Covid pandemic has resulted in all sectors, like it or not, having to use technology to support business activities and mobility [2][3]. The importance of using information technology in solving various problems in society [4][5]. So the Deli Serdang museum must also be able to prepare to make these changes. The problem faced is that the Deli Serdang museum management



has not been able to apply information technology in predicting the number of tourist visits to the Deli Serdang museum [6][7][8][9].

The solution to the problem faced is the implementation of data mining in the form of an application that can be used as a predictor in predicting the interest of tourist visitors to the Deli Serdang museum. The information obtained can then be used as a basis for making decisions and implementing policies to improve services to the community which will have an impact on increasing tourist visits to the Deli Serdang museum .

The problem with all tourist attractions during the Covid-19 pandemic is actually almost the same, namely the decline in the number of tourist visitors due to the government's PSBB policy in minimizing the spread of Covid-19. The lack of readiness of Human Resources, namely Deli Serdang Museum employees, in utilizing data mining technology in particular will result in a decline in Deli Serdang Museum services to visiting tourists[10]. The following are the problems at the Deli Serdang Museum as follows:

1. Lack of knowledge and skills in applying information technology to improve services to tourists visiting the Deli Serdang museum. The lack of human resource capabilities at the Deli Serdang Museum in the field of application and use of technology can result in a decline in the quality of service to tourists due to the impact of the Covid-19 pandemic.
2. Lack of ability to use data mining applications to predict tourist interest. Lack of knowledge and skills in using Data Mining applications to predict the number of tourist visits. Where if visits decrease, you can make policies or decisions regarding promotional media and so on which aim to increase tourist visits to the Deli Serdang Museum. However, if there is a spike in tourist visits, the Deli Serdang museum can also take precautions to avoid crowds or policies regarding limiting the spread of the Covid-19 virus.

## 2. RESEARCH METHODOLOGY

The Community Service Team immediately visited the Deli Serdang museum to carry out program activities, then the training was also directly practiced at the Deli Serdang museum. In implementing the program the team consists of lecturers and does not forget to involve students in implementing the independent learning campus. The methods offered by the team are as follows:

- a. Talks and ConversationsThe community service team uses lectures and conversations as their teaching techniques. Thirty percent of the training participants are workers of the Deli Serdang museum, and the remaining seventy percent are trained directly from the materials.After the presentation, attendees get lecture (training) materials. This is followed by a Q&A session and hands-on practice.Training materials include:
  - 1) Informational brochures about the use of information technology in providing visitors to the Deli Serdang museum with better services.Speakers: S.Kom, M.Kom, and Sri Wahyuni.
  - 2) An introduction to data mining applications by Hermansyah, S.Kom., M.Kom.; introductory material about applications that can be utilized to anticipate tourists' interest in visiting the Deli Serdang museum.The objective to be fulfilled
- b. Practice directly processing data that can be used as information as a basis for making policies or decisions as a strategy for improving services and resulting in an increase in the number of tourist visits to training participants delivered by the PKM Team and accompanied by students from the computer engineering and computer systems study program Universitas Pembangunan Panca Budi Medan.

The realization carried out by the team in this program took an approach by discussing with the Head of the Culture and Tourism Division of the Youth, Sports and Tourism Service by discussing the obstacles faced and program needs that needed to be implemented, then the team immediately carried out internal discussions with the PKM team in strengthening the programs and methods that were implemented. has been determined by not forgetting to carry out the program according to the Covid-19 Health protocol by wearing a mask and washing hands and maintaining distance and so on. The key to the success of this Community Service program is the teamwork and partners involved. The series of work procedures for the Community Service program are as follows :

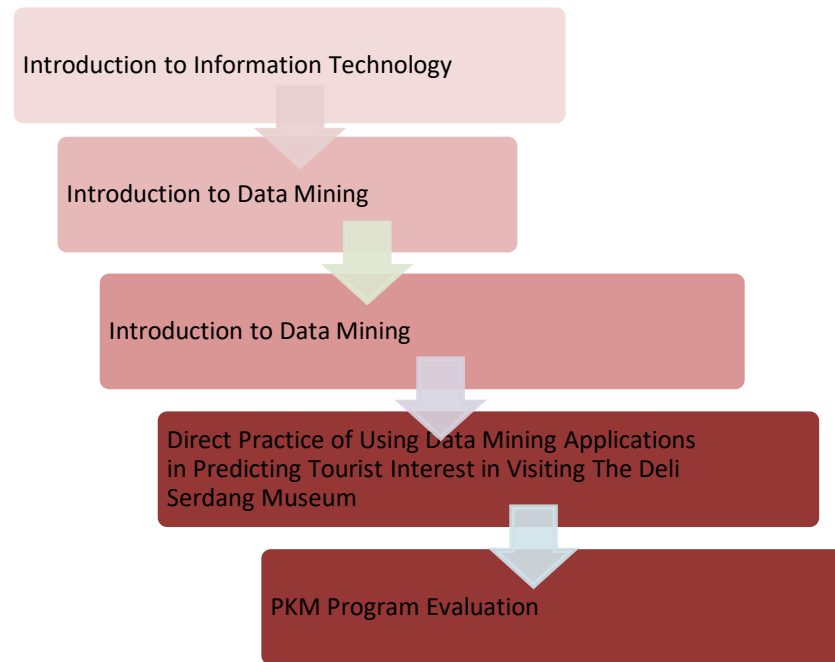


Figure 1. Work Procedures

Implementation of activities carried out:

1. Direct observation.

Together with several representatives of the PKM Team, they carried out direct observations, collecting data and information on the conditions that occurred which were obtained from employees and heads of divisions at the Deli Serdang Museum, North Sumatra, direct interviews and direct capture of the conditions of problems that occurred at the Deli Serdang museum.

2. Hearing between the PKM Team and Partners

Before carrying out the implementation of the program, the team first held an audience regarding the implementation and mechanism of the PKM program with the Deli Serdang museum. During the audience the Deli Serdang museum personally came to visit the PKM team at the Panca Budi Development University, especially the Faculty of Science and Technology as proof of enthusiasm for the program which will be executed.

3. Socialization of the Introduction to Information Technology.

In implementing the program, students are involved as a form of interaction between lecturers and students outside of the course and to provide additional insight and experience for students, but students are only helpful. The PKM team presented material about the important role of using technology, especially the internet and various technologies, in implementing and resolving problems faced, especially during the Covid-19 pandemic.

4. Introduction to Data Mining Applications.

At this stage the team conducted outreach about the important role of Data Mining Applications, various examples of Data Mining applications, what their advantages are and how to use them, including installing applications assisted by computer engineering students at Universitas Pembangunan Panca Budi.

5. Training to predict tourist interest in visiting the Deli Serdang museum.

The PKM team carries out direct practical training in collecting data, processing data and ultimately knowing the knowledge or information resulting from data mining processing which can be used as a basis for making policies or decisions.

6. Evaluation of Results.

At this stage the team carried out an evaluation to find out how much the participants absorbed the material provided and the impact obtained from implementing the Optimization of Data Mining training in Predicting Tourist Visits at the Deli Serdang Museum.

### 3. RESEARCH RESULTS

Data mining is the process of extracting useful knowledge or patterns from large data sets. In predicting tourism visits to the Deli Serdang Museum, data mining can be used to analyze previous tourist visit data, including information such as date of visit, duration of visit, number of tourist visits, profile of tourist visits and tourist preferences. The application of Data Mining at the Deli Serdang Museum can help predict tourist visits by using a prediction model based on historical data. Some data mining techniques that can be used include regression analysis, cluster analysis, decision trees, and artificial neural networks. By analyzing historical data on tourist visits and identifying patterns or trends, museums can make predictions about future tourist visits. The results of this PKM data mining to predict tourist visits to the Deli Serdang Museum will really depend on the method used, the quality of the data used, and other factors that influence tourist visits.

Overall, the PKM program ran smoothly and was successful. All this is due to the role of the partners involved, namely:

1. Starting from direct observation activities carried out by the PKM team, data was collected through question and answer discussions and interviews conducted by the team with the Deli Serdang museum providing complete and clear information about the needs and mechanisms that have occurred so far.
2. In implementing the activities, the team received assistance by obtaining permission to carry out implementation as well as training at the Deli Serdang museum as a place to carry out PKM program activities.

The final and closing session of this PKM program activity is conducting an evaluation. Evaluation of program implementation is carried out by giving a test at the end of the implementation session with the aim of knowing to what extent the participants received the material that was presented by the PKM team. As well as knowing the percentage success rate of the PKM program.



Figure 1. Situation Analysis



Figure 2. Photo of The PKM Team With The Audience



Figure 3. Implementation of The PKM Program

#### 4. CONCLUSION

The results of the PKM Program show that the use of data mining can provide accurate predictions about tourist visits to the Deli Serdang Museum. Data collected includes factors such as weather, holidays, special events, and museum promotions. The implementation of data mining shows that there is a relationship between these factors and tourist visits. By using data mining algorithms, data mining applications can identify patterns and trends from historical data, so that they can predict the level of tourist visits in the future. The resulting rules or knowledge can be used as a basis for decision or policy making so that by utilizing data mining techniques, museum managers can optimize marketing and promotional efforts to attract more tourists to visit the Deli Serdang Museum. Accurate predictions of visitation levels can assist in human resource planning, setting operating hours, and developing special event programs [11][12]. However, data mining applications also have several limitations. One of them depends on the quality and quantity of data collected [13][14][15]. Additionally, other factors not included in this study, such as economic trends or unexpected events, may also influence visitation rates. Future suggestions include expanding the range of variables used and considering other factors that can influence tourist visits. The use of other data mining algorithms can also be explored to compare the accuracy of visit predictions



[16][17][18][19]. The role of information technology is very much needed in facing industry 5.0 so that the participation of the community and various parties is needed in increasing community competence in using technology in all fields [20][21][22][23].

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