

Implementation of Business Intelligence In Planet Helmet Cilacap Sales

Ginanjar Rizqi Setiani^{1*}, Verry², Mochamad Taufiqurrochman Abdul Aziz Zein³

^{1,3} Informatics, Nahdlatul Ulama Al Ghazali University, Cilacap

² Information Systems, Nahdlatul Ulama Al Ghazali University, Cilacap

¹rizqisetianiginanjar@gmail.com



ABSTRACT

*Corresponding Author

Article History:

Submitted: 27-11-2024

Accepted: 30-11-2024

Published: 13-12-2024

Keywords:

Helm; Indonesia; OLAP; ETL; Sales.

Brilliance: Research of Artificial Intelligence is licensed under a Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0).

Helmets are used to anticipate serious injuries when traffic accidents occur. In several cities and villages, various helmet businesses have begun to emerge. The increasing number of residents and motorized vehicles in Indonesia provides business opportunities in the helmet business. The increasingly competitive business market challenges companies to be able to adapt to changing market conditions and diverse buyer needs. For this reason, companies must be able to respond quickly and accurately, consider the costs incurred to remain conducive, and have a strategy in decision-making that can provide solutions to changes in the current market situation to survive in the long term. Therefore, companies must be able to respond quickly and accurately, consider the costs incurred to remain conducive, and have a strategy in decision-making so that companies can survive in the long term. The implementation of business intelligence in this study uses the Online Analytical Processing (OLAP) method, namely the use of Extraction Transformation Loading (ETL), creating a data warehouse, analyzing data for users and user interfaces in the form of information visualization using the Laravel framework. Planet Helm currently needs to manage its sales data visualization digitally. This is an obstacle for leaders in managing inventory needs, and helmet sales are less effective and efficient, requiring the digitalization of web-based business intelligence management. The results of this study are in the form of a dashboard display consisting of a minimum of 7 stock widgets, average monthly sales, popular brand graphs, and monthly sales graphs.

INTRODUCTION

Motorcycle safety and security are things that need to be considered in traffic. Based on data sources from the Indonesian National Police, an average of 3 people die every hour due to road accidents in Indonesia triggered by human, vehicle, infrastructure, and environmental factors (Suardi et al, 2022). Traffic awareness is shown by obeying regulations such as carrying a Driving License (SIM), Vehicle Registration Certificate (STNK), and helmet. Helmets are used to anticipate serious injuries when traffic accidents occur. Indonesian national standard helmets are mandatory for motorcycle riders (Rizana, Ade Pratiwi Susanty, 2019). This is by the regulations of the Indonesian government in Law Number 22 of 2009 concerning Traffic and Road Transportation (LLAJ) and Article 106 paragraph 8, concerning the obligation to wear a helmet (Suardi et al, 2022).

Planet Helm currently needs to manage its sales data visualization digitally. This is an obstacle for leaders in managing inventory needs, and helmet sales are less effective and efficient, thus requiring the digitalization of web-based business intelligence management. In several cities and villages, various helmet businesses have begun to emerge. The increasing number of residents and motorized vehicles in Indonesia provides business opportunities in the helmet business (Rahmawati, 2019).

The increasingly competitive business market presents challenges for companies in adapting to changing market conditions and the diverse needs of buyers. For this reason, companies must be able to respond quickly and accurately, consider the costs incurred to remain conducive, and have a strategy in decision-making that can provide solutions to changes in the current market situation to survive in the long term.

Planet Helm was founded in 2018; all recording of incoming and outgoing goods uses books and Microsoft Access as data processing, but along with the increasing number of diverse product brands, Planet Helm experienced obstacles related to information visualization and sales predictions to handle the number of product brand stocks that should be available so that there is no accumulation of product brands in the warehouse.

The role of business intelligence is an application that can summarize integrated evaluations in determining strategic plans (Junaedi et al., 2020) (Pressman, 2015). The method applied to implement business intelligence is the (Online Analytical Processing) OLAP method, namely a technology that uses multidimensional data visualization to provide faster access to information strategies to accelerate analysis (Maulana & Wulandari, 2019) (S. Khan et al.,



2020) (M. A. Khan et al., 2020). The main success of implementing business intelligence is reporting and planning to analyze the company's business situation to increase the company's strength and reduce the possibility of future decline (Rudiawan, 2021).

Planet Helm currently needs to manage its sales data visualization digitally. This is an obstacle for leaders in managing inventory needs, and helmet sales are less effective and efficient, thus requiring the digitalization of web-based business intelligence management.

METHOD

The research method describes the steps in the research carried out, starting from how to collect the data needed as material for compiling. The following research methods are used as a guide in this research:

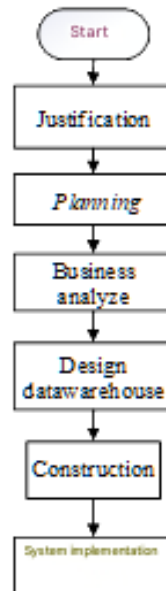


Figure 1. Research Method

Figure 1 describes the steps taken by the research. The functional needs analysis stage is the stage for collecting the needed information at Planet Helm Cilcap. Furthermore, a literature study is carried out on business intelligence development. The next stage is collection by observation and direct interviews with related parties at Planet Helm Cilcap. After obtaining data modeling, the next stage is to implement Business Intelligence using the methodology from Larrisa T. Moss, where the methodology consists of 5 stages, namely (Handika & Satyawati, 2022) (Karina & Mansuri, Anis Rohmadi, 2021):

1. Justification, namely identifying business intelligence needs such as analyzing the availability of sales, purchasing, and stock data, cleaning data, and creating interface designs for admins and customers (Widaningrum, 2018).
2. Planning, namely making business intelligence development plans. The result of planning is the creation of a business intelligence dashboard that displays popular product brand graphs in the form of pie charts, minimum stock widgets, average monthly sales, and monthly sales graphs. The tables used are transaction, transaction_details, and product tables (Dewi et al., 2021).
3. Business analysis: sorting data for the Extract Transfer Load process. The result of business analysis is sorting sales data in the date column, product brand name, and quantity. Sales data is entered into the product, transaction, and transaction_detail tables (Achmad et al., 2020) (JRP, 2014).
4. Datawarehouse design, namely compiling data that produces dimension and fact tables. Dimension tables consist of attributes or fields that provide unique information. The data warehouse schema is formed from dimension and fact tables on the planet helm, as shown below:

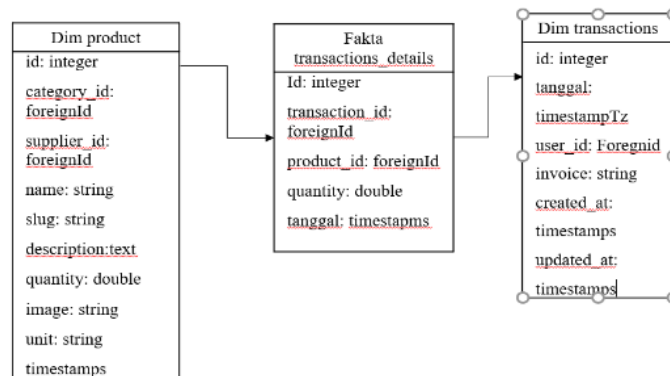


Figure 2. Data warehouse design

Construction, namely data migration processed for business intelligence dashboard purposes.

RESULT

Justification

Data cleaning using Microsoft Excel with the format cells feature, number to remove decimals behind numbers, find and replace unnecessary spaces or commas, and the filter feature to separate the helmet category from the others. The sales data before and after the cleaning process are shown in table 1 and 2:

Table 1. Data before the cleaning process

Transaction Number	Line Number	Item	Quantity	Disc item	Selling Price	Total	Selling price Hidden
TJ0000368	2,00	KACADATAR HITAM	1,00	0,00	50,000,00	50,000,00	50,000,00
TJ0000368	3,00	JC CERIA	1,00	0,00	70,000,00	70,000,00	70,000,00
TJ0000368	4,00	PC L PERSONAL	1,00	0,00	60,000,00	60,000,00	60,000,00
TJ0000368	5,00	JC PINGUIN CX7	1,00	0,00	180,000,00	180,000,00	180,000,00
TJ0000368	6,00	MSKR NINJA POLOS	2,00	0,00	10,000,00	10,000,00	10,000,00
TJ0000368	7,00	JAS PLASTIK	4,00	0,00	10,000,00	10,000,00	10,000,00
TJ0000368	8,00	JAS PLASTIK CLANA	1,00	0,00	15,000,00	15,000,00	15,000,00
TJ0000368	9,00	PC L PERSONAL	1,00	0,00	60,000,00	60,000,00	60,000,00
TJ0000368	10,00	JC PINGUIN CX7	1,00	0,00	170,000,00	170,000,00	170,000,00
TJ0000368	11,00	PC L PINGUIN P535	1,00	0,00	140,000,00	140,000,00	140,000,00
TJ0000368	12,00	PC L ROYAL	1,00	0,00	90,000,00	90,000,00	90,000,00
TJ0000368	13,00	VITANO PENTIUM	1,00	0,00	100,000,00	100,000,00	100,000,00
TJ0000369	1,00	JAS PLASTIK	1,00	0,00	10,000,00	10,000,00	10,000,00
TJ0000369	2,00	ST NIKE PANJANG	1,00	0,00	20,000,00	20,000,00	20,000,00
TJ0000369	3,00	KACA CENTRO	1,00	0,00	50,000,00	50,000,00	50,000,00
TJ0000369	4,00	MSKR BUFF CHINA	1,00	0,00	10,000,00	10,000,00	10,000,00
TJ0000369	5,00	KYTDJ MARU POLOS	1,00	0,00	330,000,00	330,000,00	330,000,00
TJ0000369	6,00	NJS KAIROZ	1,00	0,00	750,000,00	750,000,00	750,000,00
TJ0000369	7,00	PC L KHARISMA	1,00	0,00	100,000,00	100,000,00	100,000,00
TJ0000369	8,00	JC AXIO	1,00	0,00	280,000,00	280,000,00	280,000,00
TJ0000369	9,00	JAS PLASTIK	1,00	0,00	10,000,00	10,000,00	10,000,00
TJ0000370	1,00	VITANO PENTIUM	1,00	0,00	10,000,00	10,000,00	10,000,00
TJ0000370	2,00	GALAXY KIDS	1,00	0,00	120,000,00	120,000,00	120,000,00
TJ0000370	3,00	CARGLOSS	1,00	0,00	260,000,00	260,000,00	260,000,00
TJ0000370	4,00	KACADATAR BENING	1,00	0,00	50,000,00	50,000,00	50,000,00

Table 2. Data after the cleaning process

Transaction Date	Item	Quantity
	KYT	1
	VITANO	1
	KYT	1
	INK	1
	KYT	1
24/06/2023	KYT	1
	VITANO	1
	G2	1
	DAG	1
	KYT	1
	DAG	1
	CARGLOSS	1
26/06/2023	TGP	1
16/06/2023	SOJI	1
	INK	1
	DAG	1
	INK	1
27/06/2023	TGP	1
	CARGLOSS	1
28/06/2023	VITANO	1
29/06/2023	KYT	1
	NJS	1
30/06/2023	VITANO	1
	GALAXY KIDS	1
	CARGLOSS	1

Planning

The result of planning is the creation of a business intelligence dashboard that displays six popular product brands in the form of a pie chart, average monthly sales, monthly sales graphs, and a minimum stock widget of 7.

Business Analyze

The result of the business analysis is the selection of data for Extract transfer load, namely sales data from January 1, 2021 - June 30, 2023, as many as 2851 rows and three columns, namely date, product brand, the quantity entered into the database in the products, transactions, and transaction_details tables.

Design data warehouse

The fact table is a transaction_details table, while the dimension table is the transactions and products table.

DISCUSSION

Construction

Construction is the implementation of BI on the sales of Planet Helm Cilacap based on the web. At this stage, what is done in preparation for the implementation of the business intelligence system, namely:

a. Sign Menu

This implementation results in the visualization of the Planet Helm web-based business intelligence dashboard. For the display of the sign-in menu page, the user verification process can be seen in Figure 3, namely:

Figure 3. Sign in

b. Category menu

The category menu is used to input category data from products sold by Planet Helm. For the category display, it can be seen in Figure 4, namely:

Figure 4. Category menu

c. Product brand

The product menu is used to input product data sold by Planet Helm. For the display of product brands in Figure 5, it is:

#	GAMBAR	MERK PRODUK	SUPPLIER	KATEGORI	SATUAN	AKSI
1		MDS	PT Galery helmet	Helm	PCS	Ubah Data Hapus Data
2		HBC	Jaya abadi	Helm	Pcs	Ubah Data Hapus Data
3		NHK	PT Galery helmet	Helm	Pcs	Ubah Data Hapus Data
4		HIU	PT Galery helmet	Helm	Pcs	Ubah Data Hapus Data
5		GALAXY KIDS	Rumah helm	Helm	PCS	Ubah Data Hapus Data
6		TGP	Jaya abadi	Helm	Pcs	Ubah Data Hapus Data

Figure 5. Product menu

d. Stock menu

The stock menu displays and adds the amount of stock sold by Planet Helm. For the display of product stock in Figure 6, it is:

#	GAMBAR	NAMA PRODUK	SUPPLIER	KATEGORI	SATUAN	STOK	AKSI
1		MDS	PT Galery helmet	Helm	PCS	1	Tambah Stok
2		HBC	Jaya abadi	Helm	Pcs	2	Tambah Stok
3		NHK	PT Galery helmet	Helm	Pcs	7	Tambah Stok
4		HIU	PT Galery helmet	Helm	Pcs	1	Tambah Stok
5		GALAXY KIDS	Rumah helm	Helm	PCS	64	Tambah Stok
6		TGP	Jaya abadi	Helm	Pcs	26	Tambah Stok
7		G2	Jaya abadi	Helm	Pcs	18	Tambah Stok

Figure 6. Stock menu

e. Sales

The sales menu is a menu used to store product data sold by Planet Helm. The display of product sales in Figure 7 are:

#	TANGGAL	NAMA PELANGGAN	INVOICE	NAMA MERK PRODUK	JUMLAH MERK PRODUK
1	2023-05-03 14:41:39	Customer		• GALAXY KIDS • INK • VITANO • GALAXY KIDS • KYT • INK • KYT • KYT • CARGLOSS • KYT • SOJI	• 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1
2	2023-05-04 14:41:56	Customer		• CARGLOSS • SOJI • G2 • SOJI	• 1 • 1 • 1 • 1

Figure 7. Sales

f. Product brand request

The sales menu is used to add product brand data to Planet Helm. For the display of the product brand menu in Figure 8 are:

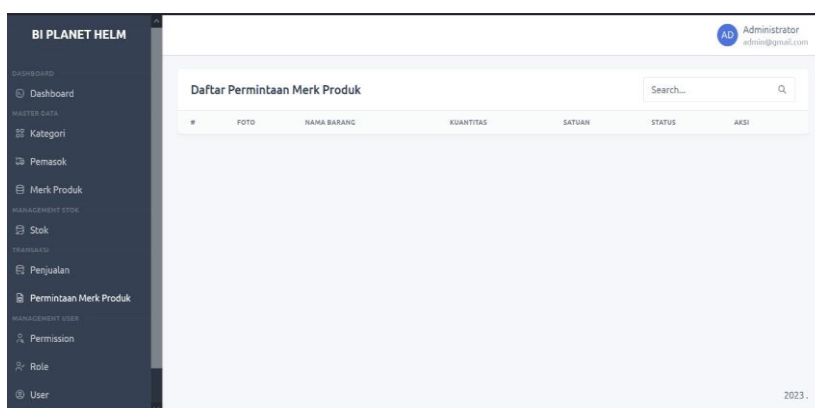


Figure 8. Product brand request menu

g. Permission

The Permission menu is a menu used to display Planet Helm product requests. The display of the product request menu in Figure 9 is as follows:

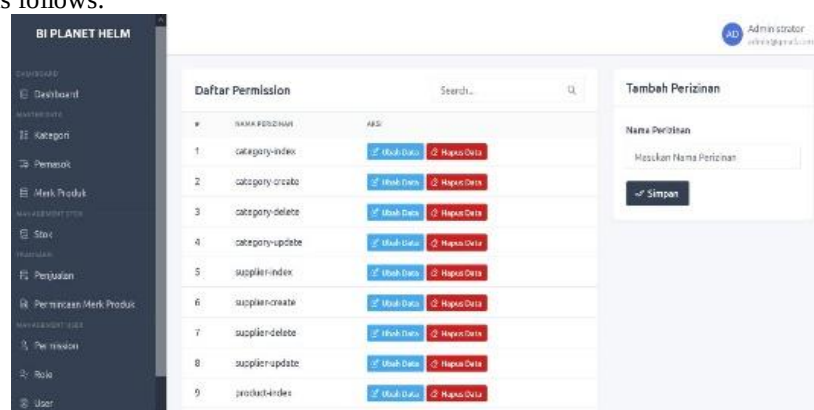


Figure 9. Permission

System Implementation

a. Popular product brand graph

On the dashboard menu, there is a graph of the most popular product brands, namely Soji with a value of 26.9% as much as 768 pcs, car gloss with 20.9% as much as 597 pcs, Galaxy Kids with 14.5% as much as 413 pcs with, kyt 13.2% as much as 376 pcs, vita no 12.8% as much as 365 pcs, ink 11.9% as much as 339 pcs as in figure 10 below:

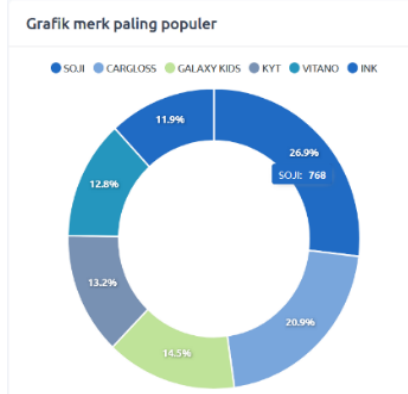


Figure 10. popular sales

b. Average monthly sales widget

To find out the average sales per month per product brand is shown in Figure 11 below:

Rata-rata Penjualan Bulanan

Tahun	Merk produk	kategori	Total	Rata-rata per bulan
2021	BMC	Helm	7	0.58
2022	BMC	Helm	2	0.17
2023	BMC	Helm	1	0.17
2021	CARGLOSS	Helm	297	24.75
2022	CARGLOSS	Helm	211	17.58
2023	CARGLOSS	Helm	89	14.83
2021	DAG	Helm	71	5.92
2022	DAG	Helm	81	6.75
2023	DAG	Helm	33	5.5
2021	G2	Helm	28	2.33
2022	G2	Helm	41	3.42
2023	G2	Helm	23	3.83

« Previous Next »

Showing 1 to 12 of 54 results

< 1 2 3 4 5 >

Figure 11. Average sales

c. Minimum stock widget

The minimum stock in this study, the minimum product stock is 7. As for the product brand, the product brand stock is less than shown in Figure 12 below:

Daftar merk produk dengan stok kurang dari 7

2	BMC	Kategori : Helm
2	GM	Kategori : Helm
2	HBC	Kategori : Helm
1	HIU	Kategori : Helm
5	JPN	Kategori : Helm
1	MDS	Kategori : Helm

Figure 12. Minimum stock

d. Monthly sales graph

To find out the increase in product sales per product brand each month is shown in the sales graph in Figure 13 below:

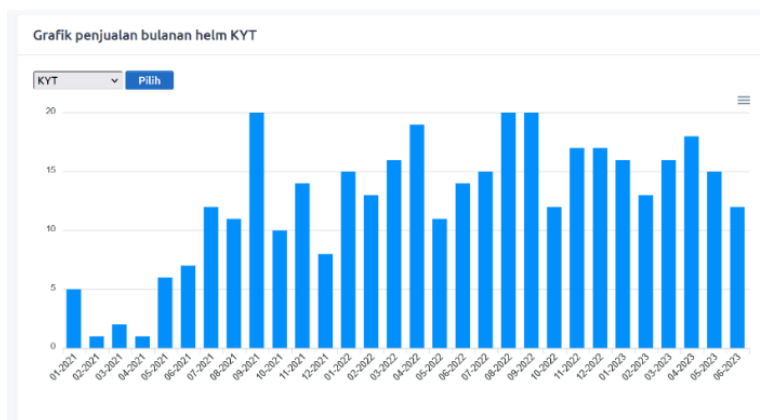


Figure 13. Monthly sales graph

CONCLUSION

Implementing Business Intelligence (BI) in selling Planet helmet products with outputs equipped with data visualization makes it easy for readers to understand the quantity and quality of product sales. The business intelligence that has been created helps users analyze and process the running of business activity to accelerate the management of data into information compared to before. With the business intelligence that has been created, users can find out which sales are more popular and which goods are less popular with consumers. They can decide to develop a strategy to

increase subsequent sales. The Business Intelligence dashboard visualization results include a minimum stock widget, popular brand graphs, and monthly sales graphs. The Business Intelligence dashboard can display the highest sales of the Soji brand, 768 pcs, and the lowest Ink brand, 339 pcs. For further research in business intelligence development, it is necessary to analyze overall sales and not only profit data. Applications that can be directly connected to the company database or use real data.

REFERENCES

- Achmad, M., Andre, & Susilawati, D. (2020). Penerapan Business Intelligence Data Superstore Dengan Menggunakan Metode OLAP. *Algor*, 2(1), 48–56. <https://jurnal.ubd.ac.id/index.php/algor/article/view/460/263>
- Dewi, K. K., Hermawan, A., & Kusuma, L. W. (2021). Penerapan Dashboard Business Intelligence Untuk Menampilkan Fundamental Saham Lq45. *Jurnal Algor*, 3(1), 60–70. <https://doi.org/10.31253/algor.v3i1.768>
- Handika, I. P. S., & Satyawati, I. G. A. A. A. (2022). Implementasi Business Intelligence Dan Market Basket Analysis Untuk Analisa Data Penjualan Di Pt. Abc. *Rabit : Jurnal Teknologi Dan Sistem Informasi Univrab*, 7(1), 37–42. <https://doi.org/10.36341/rabit.v7i1.2091>
- JRP, M. (2014). Pentaho : Solusi Open Source Untuk Membangun Data Warehouse. In Andi (Ed.), *Andi Offset* (1st ed.). Andi Offset.
- Junaedi, I., Abdillah, D., & Yasin, V. (2020). Analisis Perancangan Dan Pembangunan Aplikasi Business Intelligence Penerimaan Negara Bukan Pajak Kementerian Keuangan Ri. *JISAMAR (Journal of Information System, Applied, Management, Accounting and Research)*, 4(3), 88. <https://journal.stmikjayakarta.ac.id/index.php/jisamar/article/view/249/187>
- Karina, T., & Mansuri, Anis Rohmadi, R. I. P. (2021). Implementasi Business Intelligence Untuk Data Penjualan Pada Toko Scalaris Makmur Menggunakan Aplikasi Tableau Desktop. 7, 3–7.
- Khan, M. A., Saqib, S., Alyas, T., Ur Rehman, A., Saeed, Y., Zeb, A., Zareei, M., & Mohamed, E. M. (2020). Effective Demand Forecasting Model Using Business Intelligence Empowered with Machine Learning. *IEEE Access*, 8, 116013–116023. <https://doi.org/10.1109/ACCESS.2020.3003790>
- Khan, S., Qader, M. R., Ka, T., & Abimannan, S. (2020). Analysis of Business Intelligence Impact on Organizational Performance. In I. Xplor (Ed.), *2020 International Conference on Data Analytics for Business and Industry: Way Towards a Sustainable Economy, ICDABI 2020* (pp. 9–12). IEEE. <https://doi.org/10.1109/ICDABI51230.2020.9325610>
- Maulana, A., & Wulandari, D. A. N. (2019). Business Intelligence Implementation To Analyze Perfect Store Data Using the OLAP Method. *Sinkron*, 3(2), 103. <https://doi.org/10.33395/sinkron.v3i2.10036>
- Presman, roger s. (2015). *Rekayasa perangkat lunak pendekatan praktisi*. google.co.id.
- Rahmawati, A. (2019). Pengaruh jumlah penduduk, jumlah kendaraan bermotor, PDRB per kapita dan kebijakan fiskal terhadap konsumsi energi minyak di Indonesia. *Jurnal Pembangunan Dan Pemerataan (JPP)*, 10(1), 1–28. <https://jurnal.untan.ac.id/index.php/jcc/article/download/46368/75676589695>
- Rizana, Ade Pratiwi Susanty, A. S. U. (2019). Sepeda Motor Di Dalam Area Kampus Universitas Lancang Kuning Menurut Undang-Undang Nomor 22 Tahun 2009 of Helmet for Student Riders Motorcycles in Campus Area Lancang Kuning University According To. *Gagasan Hukum*, 01(22), 189–198. [https://dspace.uui.ac.id/bitstream/handle/123456789/45019/CE REFORM 2023 Hadi%2C dkk.pdf?sequence=1&isAllowed=y](https://dspace.uui.ac.id/bitstream/handle/123456789/45019/CE%20REFORM%202023%20Hadi%20dkk.pdf?sequence=1&isAllowed=y)
- Rudiawan, H. (2021). Pemanfaatan Sistem Bisnis Intelijen (Bi) Dalam Pengambilan Keputusan Manajemen Perusahaan. *Jurnal Ekonomi*, 23(3), 191.
- Suardi, Muhajir, Auliah Andika Rukman, Raditya Feda Rifandhana, Hananto Widodo, T Nazaruddin, Sri Bakti Yunari, D. G. (2022). Pengetahuan Hukum, Pemahaman Hukum, Sikap Hukum dan Perilaku Hukum Pengemudi Ojek Online dalam Berlalu Lintas di Kecamatan Rappocini Kota Makassar. *Jurnal Pendidikan PKN (Pancasila Dan Kewarganegaraan)*, 3(2), 129. <https://doi.org/10.26418/jppkn.v3i2.51962>
- Suardi1), Takdir2), Muhajir3), Auliah Andika Rukman4), R. F. R., & Hananto Widodo6), T Nazaruddin7), Sri Bakti Yunari8), D. G. (2022). *Jurnal Pendidikan PKN Pancasila dan Kewarganegaraan ONLINE DALAM BERLALU LINTAS DI KECAMATAN Jurnal Pendidikan PKN Pancasila dan Kewarganegaraan*. 3(2), 129–142.
- Widaningrum, A. H. (2018). Analisis Data Peminjaman Bank Menggunakan Metode OLAP (Online Analytical Processing). *Jurnal Informatika Upgris (JIU)*, 4(1), 117–119. <https://journal.upgris.ac.id/index.php/JIU/article/download/2347/1893>