

## Analyzing Trends in Dashboard Systems for Business Strategy Insights: Mapping the Literature

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**Abstract.** This innovation mined current trends in dashboard system research to identify critical indicators for effective business strategy support, so that the evolution of dashboard systems to become more advanced and innovative is needed. The dashboard systems trend must be able to provide faster data access, more in-depth analysis, and an increasingly personalized user experience. The use of artificial intelligence in the development of current issues to help management make decisions about business strategy. A questionnaire survey of 91 professionals was conducted to rank 23 dashboard indicators obtained from previous literature. This study conducts a mapping analysis of previous research and manages data using the Partial Least Squares-Structure Equation Modeling (PLS-SEM) analysis with revealed business analytics as the most significant indicator, followed by functionality and security. However, knowledge management and process management had relatively lower importance. The findings provide valuable insights on emphasizing analytics, security, and adaptability in next-generation responsive dashboards tailored to management needs to enhance organization performance. This study's results provide critical factors determining success in implementing the dashboard systems. This study contributes to consolidating disparate dashboard previous literature into a unified indicator framework and, as a tool assessment, the practical significance of making business strategy decisions for managers, practitioners, and academics. Future research includes investigating the effects of emerging technologies like artificial intelligence on the evolution of business intelligent dashboard systems.

**Keywords:** business strategy, business intelligent, dashboard system, mapping literature, trends.

## **1. Introduction**

The Dashboard system is generally still simple with a static display and is limited in terms of functionality, customization, and access to certain departments or business units. However, with the development of technology and business needs that are constantly changing, this will continue to drive the evolution of information system dashboards in a more advanced and innovative direction. The Dashboard system must be able to provide faster data access, more in-depth analysis, and an increasingly personalized user experience. The function focuses more on presenting reports in the form of tables and graphs that make it easier for company management to make further decisions. Also used by internal parties within the organization, such as managerial levels, to evaluate operational performance reports of related business units, more interactive by providing real-time data visualizations that are more interesting, informative, and accessible through mobile-based application devices, more tailored to the preferences and needs of individual users, can integrate data from various sources, including internal and external data, as well as from IoT devices, and business analytics that can provide predictive and prescriptive analysis to support enterprise management in making smarter decision-making. Dashboard systems are an area of business intelligence that produces information to support management in strategic business decision-making [1]. The management requires a variety of information that is used as a measurement tool to improve control and achieve company performance. The dashboard system trend is more focused on a means that can facilitate decision-making for management regarding metrics and varied performance information that make it easier to identify problems and provide potential solutions to overcome the causes of these problems. [2]. The Dashboard system trend optimizes the use of artificial intelligence so that it can provide forecasts according to the development of current issues to help management plan preventive actions for cases that occur [3]. The company needs to support the company's strategic business. Several things cause the dashboard system to not function optimally, such as data sources not being integrated and the information displayed not being real-time, resulting in inaccurate decision making, the complexity of the Dashboard system caused by too much information which confuses users in identifying key information. To overcome the limitations of this dashboard system, companies need to consider data management strategies, in-depth understanding of user needs, and select dashboard technology that is appropriate to the scale and complexity of the company's business. However, based on previous research mapping, there is still limited discussion of current trends in dashboard system needs for companies. Therefore, the companies in managing operational transactions need to use integrated systems to support making relevant strategic decisions. The company management needs an effective enterprise performance management information system to monitor and measure company performance.

The research questions that will be answered in this research are as follows:

1. What are the critical factors that influence the development of the dashboard system model?
2. What kind of trends in the dashboard system model for business strategy insights?

## **2. Literature Review**

### **2.1. Dashboard Systems**

Conditions of intense business competition require companies to have a breakthrough in managing business processes in a more effective way of working to improve the company's business performance. Company management requires an ERP system that can present reports as needed to support company management in making decisions in a timely and accurate manner. The ERP system is an information system that is integrated across business units and capable of managing company business transactions to produce information according to the needs of company management. Based on the reports generated by the ERP system, it should be able to assist company management in analyzing business processes and making strategic business decisions to increase competitive advantage. However, various problems related to information were found, where the company's management still

experienced difficulties in obtaining information from the ERP system used, so the company's management experienced difficulties in making strategic decisions, and there was even a misunderstanding of perspectives on the information generated from the ERP system. For this reason, the Dashboard system is a platform that can integrate data, business process activities, and process data into reports that provide information to support decision-making for company management [4]. The dashboard system has business analytic capabilities that can support company management in analyzing problems and making further strategic decisions [5]. The dashboard information system aims to produce various information according to the needs of company management in making further decisions with the characteristics of the dashboard system [6], namely: 1. This is synergetic to display visual information that is easy for users to understand to combine various information. 2. Monitoring to provide information to support strategic decision-making. 3. Accurately to provide accurate information to increase user confidence. 4. Responsive to provide a fast and precise response by displaying alerts regarding critical matters for the user's attention. 5. It is timely to provide the latest information for strategic decision-making. 6. Interactive to display detailed information that makes it easy for users to be interactive. 7. Data History displays information for users regarding the trend of key performance indicators from the previous period. 8. Personalized to display information specifically for users according to responsibilities, access rights, and data access restrictions. 9. Analytical to perform analysis for further decision-making. 10. Collaborative on information related to the results of management and control functions. 11. Trackability to have facilities for users to browse integrated information.

The dashboard system can analyze the business to provide value and significantly increase competitive advantage for the company [7]. The dashboard system function involves technology and data infrastructure to have the ability to manage business processes and provide information from a useful perspective to support management in making strategic decisions. Monitoring the results of performance achievement is important for company management as a step toward continuous measurement of Key Performance Indicators (KPI) for each indicator. This KPI measurement is related to company performance, which can assist company management in evaluating the achievement of business strategy. Measuring company performance KPIs becomes more effective when using the system information dashboard. The dashboard system is a visual display of various information needed by company management to consolidate various information on a single screen so that company management can make appropriate, accurate, and informative strategic decisions. The dashboard system can display various information according to the needs of company management to quickly monitor various aspects of the business so that it can identify problems and determine corrective solutions to improve company performance [8]. The dashboard system is one way that the information generated from the ERP system used can be used to provide various information needed by company management to support strategic decision-making [9]. The dashboard system is an application in the form of a collection of metrics, benchmarks, goals, results, and alerts presented visually and effectively. The dashboard system can evaluate company performance by monitoring business process management and analyzing problems based on relevant information to support strategic decision-making and improve company performance [10]. The dashboard system can also be useful for company management in making strategic decisions to evaluate the financial and operational performance of a company, which determines the company's survival. The financial risk dashboard pays attention to the solvency index indicators, operational capability index, profitability index, and development ability index [9]. Structure Diagram Dashboard System for Corporate Financial Risks can be seen in Figure 1.

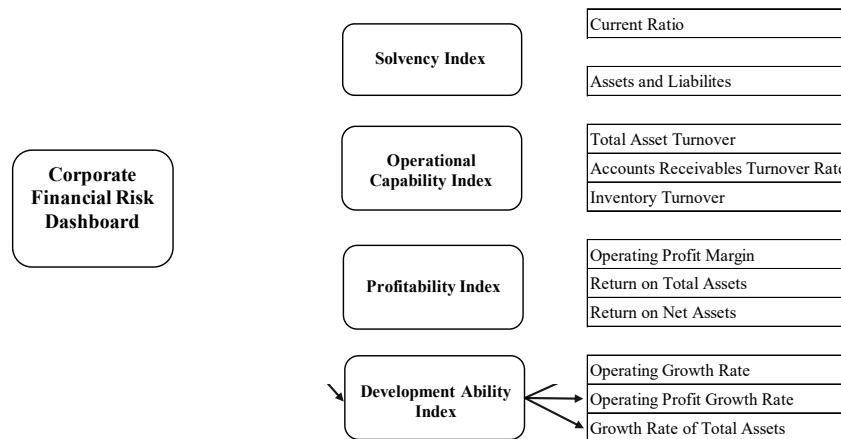


Fig. 1: Structure Diagram Dashboard System for Corporate Financial Risks [11]

Solvency Index: serves to measure the company's ability to meet financial obligations to pay off debts on time. The solvency index is often calculated by dividing a company's total current assets by its total long-term liabilities. The operational capability index: serves to evaluate the operational efficiency of the company from the perspective of productivity, cost management, and resource use. The higher the value of the operational capability index, the better the company's operational performance. The profitability index: serves to measure the extent to which the company generates profits from the revenue generated. The higher the profitability index, the better the company's profitability performance. The development ability index: serves to evaluate the company's ability to grow and develop in the long term. The higher the development capability index value, the better the long-term development prospects of the company. The dashboard information for corporate financial risks The company management can evaluate the achievement of the company's performance, to identify areas that are experiencing problems for corrective action to be taken to improve company performance. The critical factors that influence the success of implementing dashboard system and for the purposes of the strategy process are lack of vision, resistance to old culture, incompetence, inaccurate monitoring, inadequate evaluation, reluctance to learn from experience, and lack of flexibility [11]. The dashboard system has a fundamental role as a data management tool for the decision-making and management of clinical and administrative data [12]. The dashboard system provides information to company management in monitoring the inventory of IT software assets with the aim of making the monitoring process more effective and efficient. [13].

## 2.2. Accelerated SAP (ASAP) for measurement Implementation.

System Application and Product in Data Processing (SAP) is an ERP application that can provide reports to be managed in the system information dashboard as a data source to assist company management in planning and evaluating operational activities more effectively and efficiently [14]. One of the methods used as a guide in implementing SAP applications in the information system dashboard is the ASAP (Accelerated SAP) methodology. Accelerated SAP can simplify various complex business operational activities into simpler ones by optimizing the use of information system dashboards that are more functional for analysis and decision-making purposes for company management [15]. Information system dashboards based on the concept of business intelligence will make information easier to transform into reporting in the form of graphs and charts. The ability of business intelligence to transform large amounts of data quickly and flexibly can assist company management in making strategic decisions accurately and quickly. The advantages of accelerated SAP are as follows:

1. In the project preparation phase, the discussion is clear and detailed focusing on the scope of the project according to the implemented module.
2. In the blueprint phase, discussions regarding how to input data for each module to ensure the understanding of users and third parties about the workings of the SAP ERP application.

3. The implementation process becomes more structured where each timeline activity is coordinated, such as testing, development enhancement, user acceptance test, and data migration before going live using the new system.
4. Complete document recording in each phase so that the implementation stages become more effective and achieve go live on time.

### 2.3. Business Intelligence ERP SAP

Companies that have relatively large and detailed business transaction data, even though they have used the SAP ERP system to manage business transactions, still need a redundant process to process business transaction data into reports, which are the needs of company management for further decision-making. This, of course require,s a relatively long time, and the reports presented are not necessarily accurate, informative, and up-to-date. For this reason, the application of SAP Business Intelligence is one of the solutions so that the report processing process is not redundant and can help company management obtain various information as needed for fast, precise, and accurate decision-making. SAP Business Intelligence can display report layouts flexibly with a modern graphical appearance according to the needs of company management. In addition, data warehouse facilities are available so that the process of processing data into reports does not interfere with inputting transactions for operational purposes. This proves that the application of SAP Business Intelligence is important for company management in making strategic decisions [16].

### 2.4. Business Intelligence Dashboard

This study conducts a mapping from previous research to find indicators that influence the system information dashboard, and then the researcher defines these indicators as the basis for preparing questionnaire questions. The results of indicator mapping and definitions can be seen in Table 1.

Table 1: Result mapping indicators, definitions

No	Indicators	Definition	Reference
1	Data history	More Data History function to display information.	[6]
2	Data Integration	Collaborative function to collaborate information.	[4], [5], [18], [21], [23]
3	Accelerated	Accelerated methodology in the Dashboard information system.	[16], [17]
4	Flexibility	Flexibility function to perform analysis of reports.	[15]
5	Performance Management	Report comparison function for management decision-making.	[1], [4], [5], [16]
6	Personallized	Personallized function to display specific information.	[6]
7	Skills and development	User expertise and training using the Dashboard system.	[4], [21]
8	User engagement	Dashboard system testing to ensure application integration runs well.	[5], [16]
9	Decision-making Process	Analytical function to perform analysis in decision making.	[4], [16]
10	Information Value	Information dashboard as a business analytic system that provides information.	[1], [19]
11	Business Analytical	Dashboard Information System to create corporate value.	[5], [8], [18], [19], [20], [22], [28], [29], [30], [31]
12	Business Process Management	Dashboard Information System to create corporate value.	[10], [19]
13	Knowledge Management	Knowledge management function to ensure report accuracy.	[19]
14	Synergetic	Synergetic function to display user-friendly visuals.	[6]

15	Monitoring	Monitor function to provide information to support decision making.	[6]
16	Accurate	Accurate function to provide accurate information to increase user trust.	[6]
17	Responsive	Responsive function to provide fast and precise response.	[6]
18	Responsive	Responsive function to provide fast and precise response.	[6]
19	Timely	Timely function to provide up-to-date information for decision making.	[6]
20	System tracking and analysis	The Track-ability function for browsing information is integrated.	[6], [15], [20], [31]
21	Functionality application	Innovative technology by following technology trends in the dashboard system.	[15], [18], [20],[24], [25], [26]
22	Information quality	Dashboard to quickly monitor business aspects.	[8], [21]
23	Quick information	Speed of obtaining information to support decision making.	[1]

Based on the results of the mapping of indicators and definitions from previous studies, the authors summarize the explanation of the indicators as follows:

**Data History.** The recorded data becomes information that can be used to analyze trends and business patterns. Data History function to display information.

**Data Integration.** The process of combining data from various sources into one source facilitates analysis and decision-making for company management. Data integration function to collaborate information to support decision making.

**Accelerated.** The information systems project development methodology needs to be designed to speed up the product or service development process. The Accelerated methodology in the Dashboard information system is useful in speeding up the project management process.

**Flexibility.** Companies that survive are those that can adapt to change and maintain a degree of flexibility in operations, such as adapting to market changes, customer demands, and internal changes quickly and efficiently. To that end, Organizations need to increase flexibility in structures, processes, and strategies to cope with rapidly changing challenges. Innovative use of technology is one way to achieve Organizational Flexibility, by making more use of data and analysis to identify opportunities and overcome obstacles quickly and precisely. With Flexibility organization, the organization can accelerate the process of decision-making and implementation of actions by adopting principles and practices.

**Performance Management.** The process of identifying, measuring, managing, and generating information for decision-making to improve the company's performance in achieving the set goals.

**Personalized.** Describe the user experience in adapting to the preferences and needs of each company's business unit. Personalized function to display specific information as needed for decision-making.

**Skills and development.** Identify training and competency development needs and improve user skills to understand how dashboard systems work more effectively.

**User engagement.** Increasing user involvement in using information system applications that are used to accelerate the completion of work effectively. User engagement Dashboard system to ensure application integration runs well.

**Decision-making process.** The process for gathering information and analyzing data for fact-based decision-making to achieve company performance.

**Information values.** Relevance information is needed to support decision-making. An information dashboard is a business analytic system that provides relevant information for management.

**Business Analytical.** Activities of analyzing data and information to identify trends, patterns, and insights that can support strategic business decisions for company management. Dashboard Information System as a business analytical tool to increase company value.

**Business Process Management.** An approach to design, implement, and optimize business processes to run more efficiently and effectively to achieve organizational performance. Dashboard Information System can manage business processes with tight control.

**Knowledge Management.** The process of collecting, storing, managing, and sharing knowledge within an organization to improve organizational performance and innovation. The knowledge management

function can guarantee the accuracy of organizational performance results.

Synergetics. Collaboration and cooperation can improve the quality of information. The Synergetic function can display user-friendly visual information to combine various information.

Monitoring. Monitoring function to provide information to support strategic decision-making.

Accurate. Reflects the quality of appropriate, responsive, and timely information to support more effective decision-making. Accurate function to provide accurate information to increase user trust.

Responsive. Serves to provide a fast, precise response and display alerts related to critical matters for the user's attention.

Timely. Serves to provide up-to-date information for strategic decision-making.

Interactive. An iterative process for solution refinement based on feedback and learning from previous iterations. Interactive function to display detailed information that makes it easy for users to be interactive.

Personalized to display information specifically for users according to responsibilities, access rights, and data access restrictions.

Analytical to perform analysis for further decision making.

Collaborative for collaboration of information related to the results of management and control functions.

System tracking and analysis. Analyse system performance to ensure the system is functioning properly to achieve the set goals. The trackability function for browsing information is integrated.

Application functionality. Innovative technology will follow technological trends in using dashboard systems. The ability of the application to perform functionality according to user needs in accessing and analyzing data and information that is relevant to needs.

Information quality. The accuracy, precision, and reliability of the information generated by the information system dashboard will assist management in making decisions and achieving business goals.

Quick information. Speed of obtaining information to support decision-making for management.

## **2.5. Functionality**

The purpose of a functional application is 1. To present relevant information by providing access to data and information that is relevant and important to users. Increasing user involvement in providing the functionality used. 3. Support appropriate decision-making by understandably presenting data. 4. Analyse data easily. 5. Provide effective data visualization to help users understand information more clearly. 6. Optimizing business processes that facilitate the integration of data from various sources, automate routine tasks, and identify opportunities to improve business process efficiency. 7. Ensuring data security to ensure the security and confidentiality of data accessed and processed by users. 8. Reducing workload by providing efficient and fast functionality can help reduce the time and effort required to access and analyze information. 9. Improving performance and productivity that functions properly and responsively can increase user performance and productivity in analyzing data and making decisions. 10. Improving business effectiveness to increase business effectiveness by providing appropriate support in decision-making and achieving business goals. 11. Integration of relevant and important features in functionality applications is the key to the success of information system dashboards in providing added value and benefits to users.

## **2.6. Business Analytical**

Business analytics provides various benefits for organizational management which can be reviewed from various business aspects. The benefits of Business analytics are as follows: 1. Collect and analyze data thoroughly from various sources for better decision-making. 2. Identify business trends and patterns to anticipate changes in the market or customer behavior to formulate more appropriate strategies. 3. Identify areas that require improvement or an increase in efficiency. 4. Understand customer behavior, preferences, and user needs better. 5. Helping organizations formulate more effective and targeted marketing strategies. 6. Identify new business opportunities for the development of new products or services and expand into new markets. 7. Better identify and manage business risks

to take appropriate prevention or mitigation measures. 8. Increase understanding of the market, competitors, and industry trends. 9. Identify areas where innovation is needed to deliver significant benefits. 10. Analyse financial and operational performance to increase profitability and financial efficiency. 11. Turning data into valuable insights, understanding the business environment better, and making more informed decisions to increase competitive advantage for the organization.

### 3. Methodology

#### 3.1. Research method

This study uses quantitative data by mapping from previous research to find critical indicators in developing a dashboard system. Based on the previous research, this study defines indicators based on statements from previous research, focusing on perspectives related to the problems in this study. Then this study designed a questionnaire question based on the definition of the indicator then this study tested the respondents with a questionnaire technique to get feedback on the questionnaire questions. Based on the 91 respondent's answers to the questionnaire questions used the likert scale measurement technique from 1 to 5 to determine respondents rated the level of importance of the questionnaire statements. The scoring group is 1. Very unimportant, 2. Unimportant, 3. Slightly unimportant, 4. Fairly important, 5. Important, and 6. Very important [32]. This study designed the respondent's criteria for providing feedback from the questionnaire questions as follows. Age is intended to consider the maturity level of the respondent's age in giving views. The level of education is meant to consider the intellectual level of the respondents in giving opinions. Educational background is intended to consider the suitability of the respondents' educational experience. The position is intended to consider the level of work with the company's operational activities. The results of this research data processing use the SmartPLS method to determine the indicators. The results of this indicator rating serve as a guideline for designing a dashboard information system prototype feature model. Based on the answer of 91 respondent, the respondent characteristic of age 20-30 years old is 81 persons, of age 31-40 years old is 10 persons; of Level of education of strata-1 is 82 persons, of strata-2 is 9 persons ; of Education background of Technology is 91 persons; and Position of Staff is 74 persons of Manager is 17 persons.

After that, based on the result of mapping from previous literature, Authors make list of questionnaire statements. List of questionnaire statements can be seen in Table 2.

Table 2: List of Questionnaire Statements

No	Dimension	ID	Questionnaire Statements
1	Data Security	D1	How important is the More Data History function in the Dashboard System to display information for users regarding trends in key performance indicators from previous periods?
2	Data Security	D2	How important is the Personalized function in the Dashboard System to display specific information for users according to responsibilities, access rights and data access restrictions?
3	Data Security	D3	How important is the Analytical function in the Dashboard System to carry out analysis in making further decisions for users?
4	Functionality	F1	How important do you think the Synergistic function is in the Dashboard System to display visuals that are easy for users to understand and combine various information on one screen?
5	Functionality	F2	How important is the Monitor function in the Dashboard System to provide Key Performance Indicators information to support strategic decision-making?
6	Functionality	F3	How important do you think the Accurate function in the Dashboard System is to provide accurate information to increase user confidence in making strategic decisions?
7	Functionality	F4	How important is the Responsive function in the Dashboard System to provide fast and precise responses by displaying alerts for critical things for users to pay attention to?
8	Functionality	F5	How important do you think the Timely function is in the Dashboard System to provide up-to-date information for strategic decision-making for users?
9	Functionality	F6	How important is the Interactive function in the Dashboard System to display detailed information that makes it easier for users to interact?



10	Integrate	I1	How important is system testing, Dashboard, to ensure that dashboard application integration runs well and meets user needs?
11	Trend Technology	T1	How important do you think it is to use innovative technology by following technology trends in dashboard systems?
12	Knowledge Management	K1	How important is the knowledge management function in the dashboard system to ensure the accuracy of the reports produced?
13	Process	P1	How important is it for a Dashboard Information System to have the ability to manage business processes that show company performance indicators?
14	Process	P2	How important is training on using the Dashboard system to ensure users understand how to use the dashboard system well?
15	Reporting	R1	How important is the Collaborative function in the Dashboard System to collaborate information related to the results of management and control functions for users?
16	Reporting	R2	How important is the Track-ability function in the Dashboard System to track integrated information for users?
17	Reporting	R3	How important is an information dashboard to function as a business analytical system that creates value and provides competitive advantage information for the company?
18	Reporting	R4	How important is the Accelerated SAP methodology in creating Dashboard information systems in SAP applications?
19	Reporting	R5	How important do you think it is for a Dashboard Information System to be able to carry out business analytic to create value and provide a company's competitive advantage?
20	Reporting	R6	How important do you think a dashboard is to be able to display various information to quickly monitor business aspects, identify problems, determine improvement solutions to improve company performance?
21	Reporting	R7	How important is the flexibility function in the Dashboard system for analyzing available reports?
22	Reporting	R8	How important is the report comparison function in the dashboard system to support business strategic?
23	Reporting	R9	How important is the speed of obtaining information in the dashboard system to support decision-making for management?

### 3.2. Research model

Based on data processing this study designed a research model consisting of 5 dimensions (Data, Organizational, People, Process Business, and System, and each dimension having an indicator with 23 indicators. The design of this research model can be seen in Figure 2.

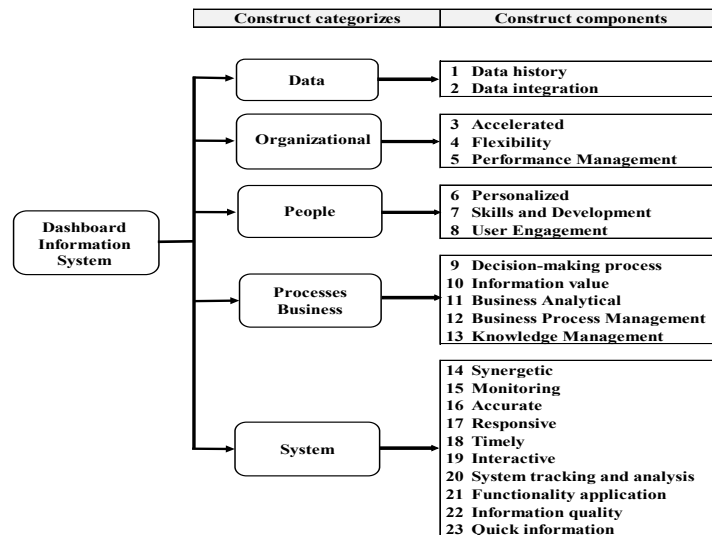


Fig. 2: Research model

## 4. Result and Analysis

In this section, the authors explained the results of research data processing.

### 4.1. Result of the SmartPLS Data Processing

Based on the PLS-SEM quality criteria results, the research uses construct reliability and validity values to evaluate and validate the structural model, ensuring the reliability and validity of the constructs used in this research. The highest value of Cronbach's Alpha is 0.862 for the reporting construct. This shows that the level of reliability of the reporting construct is the most significant thing in developing dashboard system model trends. A Composite Reliability value for measuring construct reliability above 0.7 means that it is generally considered reliable. The AVE value measures the extent to which a construct can explain variations in related items compared to variations caused by error factors. The AVE results show above 0.5, indicating that the construct can explain most of the variations in the related items. AVE plays an important role in assessing construct validity, and a low value can indicate that a construct may not differentiate well between itself and other constructs in the model. The result showed that all questionnaire statements from the respondents were reliable. The summary of the analysis result of the construct reliability and validity using PLS-SEM can be seen in Table 2.

Table 2. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extrated (AVE)
Process	0.416	0.761	0.620
Data Security	0.737	0.651	0.655
Integrate	0.708	0.869	0.769
Functionality	0.827	0.874	0.537
Reporting	0.862	0.891	0.503

Based on data processing, it shows that the Business Analytical indicator is a very significant indicator score of 0.958. The results of this research are in accordance with the results of mapping from previous literature, it shows that the Business Analytical indicator is a significant indicator of the statements of previous literature. This shows that Business Analytical indicators are dominant in supporting business intelligent processes for company management in making decision business strategic.

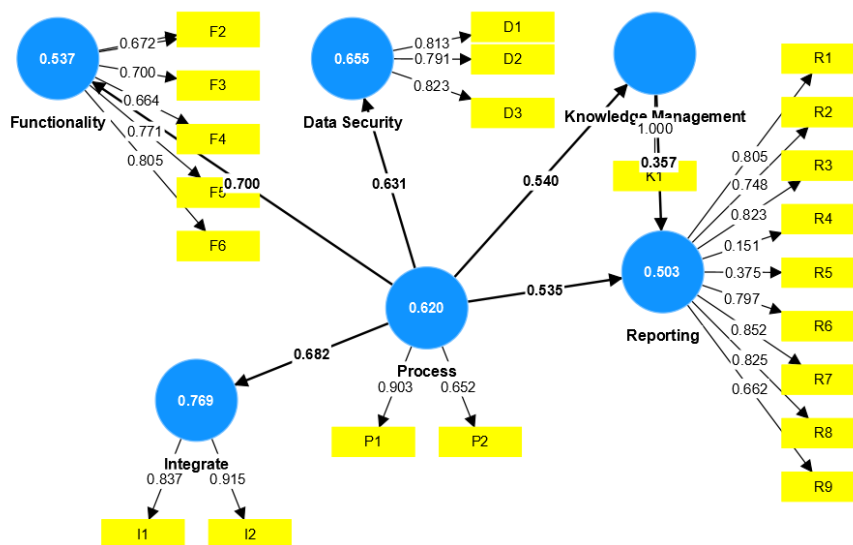


Fig. 3: Result of the SmartPLS model

Based on the figure 3 of the quality criteria results from SmartPLS data processing, this study identified 5 dimensions consisting of total effects from Knowledge Management=> Reporting is 0.357, Process=> Data Security is 0.631, Process=>Functionaly is 0.700, Process=>Integrate is 0,682, Process=>Knowledge Management is 0.540, and Process=>Reporting is 0.728. This shows that reporting is the most significant in producing dashboard systems with a score of 0.728. From 23 critical indicators in developing a business intelligence dashboard model show that business analytical is the most significant indicator with a score of 0.903 and is an important indicator of use of the dashboard systems to help company management in making decision bussines strategic to enhance the performance and competitive advantage of the organization.

Based on the results of data processing from SmartPLS, to answer the first research question of this study that the important factors that influence the development of the dashboard system model are reporting factors. This can be an important consideration for related parties in developing dashboard system models to provide dynamic reports for management decision making.

Based on the results of data processing from SmartPLS, authors conducted a score ranking where innovative technology was the indicator which had a score of 0.915 and was the highest score. This shows that The dashboard development trends must follow innovative technological trends that make it easier for users to make decisions that determine the company's business strategy. List ranking of indicators can be seen in Table 3.

Table 3: List ranking of indicators

ID	Dimensions	Indicators	Score
I1	Trend Technology	Innovative technology	0.915
P1	Process	Manage business	0.903
R7	Reporting	Analyzing available	0.852
I1	Integrate	Integration	0.837
R8	Reporting	Support business strategic	0.825
D3	Data Security	Analytical function	0.823
R3	Reporting	Business analytical	0.823
D1	Data Security	Data History	0.813
F6	functionality	Iterative function	0.805
R1	Reporting	Collaborative function	0.805
R6	Reporting	Quickly monitor business	0.797
D2	Data Security	Personalized Function	0.791
F2	Functionality	Monitor function	0.772
F5	Functionality	Timely function	0.771
R2	Reporting	Track-ability function	0.748
F3	Functionality	Accurate function	0.700
F1	Functionality	Synergistic function	0.672
F4	Functionality	Responsive function	0.664
R9	Reporting	Support decision-making	0.662
P2	Process	Training	0.652
R5	Reporting	Create value	0.375
K1	Knowledge Management	Knowledge management	0.357
R4	Reporting	Creating information	0.151

#### 4.2. Business Intelligence Dashboard

This study analyses the SAP ERP business intelligence dashboard case study for the Sales module. The display of the ERP SAP application on the reporting menu provides facilities for analyzing sales profit based on the company's business units for a certain period. The standard view reporting display from the SAP ERP application can be in the form of a tabular graph as a system information dashboard that is useful for company management in making strategic decisions. To display information in the form of an information system dashboard, the user needs to fill in the setting profile on Business Intelligence. The use of this setting includes creating a working template which will be the

basis for creating a dashboard layout. One of the uses of names, images, row, and column formats that need to be done and create layouts is a choice in conducting business intelligence analysis which is generated on the dashboard information system. Then this dashboard layout is saved and can only be changed by the Administrator. Users can only read the dashboard layout. Technological factors support company management in managing dashboard layout reports that have been determined so that the dashboard layout that has become a best practice does not need to be changed. The setting feature in SAP Business Intelligence provides benefits so that report management becomes centralized to the person in charge who is appointed to make changes to reports that have been agreed upon by the management level. The display of the SAP ERP business intelligence dashboard is shown in Figure 4.

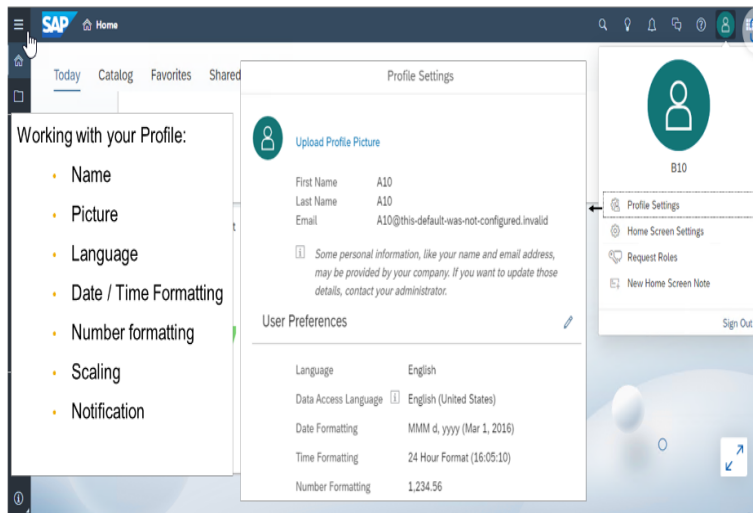


Fig. 4: Business Intelligence Dashboard ERP SAP

Sales analysis based on production costs. In sales, sales value must be reduced by production costs. Production costs, including indirect costs, are also taken into account in obtaining net profit per product. SAP Business Intelligence reporting analysis compares gross margin with net margin, so there is a difference in the pattern of increase. The sales sector is a critical part of making strategic business decisions as an act of being able to compete in the world of global markets. The results of this SAP Business Intelligence reporting analysis can support company management in making strategic decisions related to business development quickly and accurately. The SAP ERP Business Intelligence analysis dashboard is seen in Figure 5.



Fig. 5: Business Intelligence Dashboard System

Business Intelligence Dashboard analysis can compare sales plans in the form of gross margins that have been made in the previous year, able to be compared with the actual gross margin results that occur, so that the ERP SAP system can provide accuracy in determining planning gross margins, by approaching the actual or still far from the actual earned gross margin. Business Intelligence SAP can recommend gross margins that can be achieved by the company with the actual happenings in the current year. This SAP Business Intelligence analysis provides support to company management to provide support to the marketing department to obtain accurate analytical data. The company's management provides support in the form of targets, benefits, and rewards that can be obtained in every marketing following the contribution made to the company. This SAP Business Intelligence analysis can be directly presented by the marketing department to company management quickly and accurately because the report layout has been adjusted based on the needs of business units. This gross sales analysis report provides information on sales reports that occur every day. This sales analysis report has the same format as the actual report, but the value stored in this sales report is still standard, that is, it does not use month-end closing data performed by costing officers in closing costs on each existing order. So that this gross margin analysis report provides 90% accuracy compared to planning, so that the actual calculation process for this report becomes more measurable and does not differ much. This sales analysis report supports company management in analyzing achievement targets at the end of the year where planning has been targeted, which functions to support cash flow and provides accurate real-time information so that company management can make the right decisions and based on comparative data between planning and actual gross margin. Also, this sales analysis can provide regular information to company management for further strategic decision-making. Business Intelligence Analytical Dashboard in Figure 6.

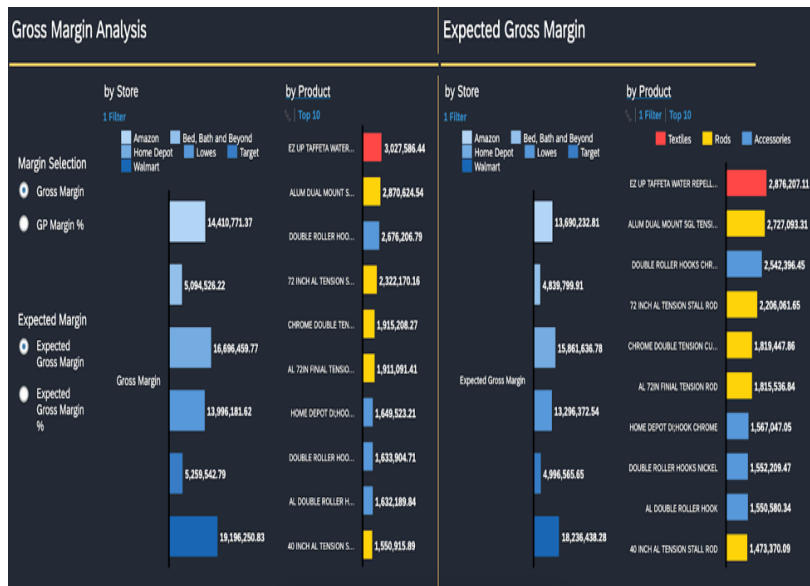


Fig. 6: Business Intelligence Analytical Dashboard

SAP ERP business intelligence dashboard case study for the Sales module, it can be concluded that the SAP ERP dashboard application is a powerful tool that can support company management in obtaining accurate, up-to-date information. Thus, the management function can focus more on making strategic decisions for the company based on trusted information through the Business Intelligence Dashboard System.

Based on the analysis of the Business Intelligence Dashboard System, to answer the second research question of this study that Trends in Dashboard System model for business strategy insights is Business Intelligence Dashboard. This can be an important consideration for related parties in developing dashboard system models for the next generation of intelligent dashboard systems with the support of artificial intelligence.

## 5. Conclusion

This study synthesized prior dashboard research to highlight key trends and indicators for effective strategy business support. The findings reveal that incorporating powerful business analytics and security features into flexible and customized dashboard systems can enhance their strategy support capability. However, the limitations of perceptual measures need to be acknowledged. Therefore, further research could expand this work through case studies and qualitative approaches for a nuanced understanding of managerial-level needs. As dashboard systems continue to evolve along with business environments, continuous empirical investigation is imperative to guide designers and strategists on how to optimally leverage their potential. This study contributes by consolidating an indicator framework to serve as a foundation for future research on next-generation intelligent dashboard system.

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