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DATA AND DECISION: HARNESSING BI WITH POWER BI, ORACLE BI, AND SQL TECHNOLOGIES

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ABSTRACT
In today's data-driven business environment, Business Intelligence (BI) tools are essential for converting raw data into actionable insights that drive decision-making. This paper examines the role of three major BI technologies Power BI, Oracle BI, and SQL technologies focusing on their integration, reporting capabilities, and advantages in supporting informed decision-making. Power BI is known for its user-friendly interface and seamless integration with other Microsoft products. It is a self-service BI tool that allows users, even those with limited technical knowledge, to create dynamic visual reports and dashboards. While Power BI excels in its ease of use and accessibility, it can struggle with scalability and performance in large, complex environments, making it more suitable for small and medium-sized enterprises (SMEs). Oracle BI, in this article focused particularly within the context of Oracle E-Business Suite (EBS), provides an enterprise-level solution for robust, scalable reporting and analytics. Oracle BI's capabilities, including multidimensional analysis, financial reporting, and data security, are essential for organizations requiring advanced reporting across multiple business functions, such as finance, procurement, and supply chain management. When integrated with Oracle EBS, Oracle BI enables real-time analytics, ensuring consistency and reliability in data-driven decisions. However, Oracle BI's high cost, complexity, and need for specialized skills limit its use to larger organizations with dedicated BI teams. SQL technologies serve as the foundation for BI tools by enabling data extraction, manipulation, and aggregation from relational databases. While SQL does not offer advanced reporting features on its own, it supports the underlying data management for tools like Oracle BI and Power BI. SQL's power lies in its ability to query and manage structured data, making it an essential component in any BI ecosystem. This paper explores the advantages and disadvantages of these technologies in the context of BI reporting. Power BI's advantages are its ease of use and cost-effectiveness, but it may face challenges with large datasets. Oracle BI offers high scalability and advanced reporting but requires expertise and investment, making it better suited for large enterprises. SQL technologies provide the necessary infrastructure for data management, though they are limited in terms of visualization capabilities. By focusing on the integration of Oracle BI with Oracle EBS, this paper highlights how these technologies, when combined, improve data reporting, streamline decision-making, and help organizations enhance operational efficiency.

Keywords:
Business Intelligence (BI), Power BI, Oracle BI, SQL Technologies, Data Reporting, Oracle E-Business Suite (EBS), Data Analytics, Decision-Making, Enterprise Reporting, Real-time Analytics, Data Integration, Business Performance Analysis, Data Visualization, Scalable BI Solutions, Financial Reporting

I. INTRODUCTION

As the rapidly evolving world of data analytics continues to shape the business landscape, Business Intelligence (BI) tools such as Power BI, Oracle BI, and SQL have become a necessity for organizations that aim to harness the power of data to make informed decisions. These tools have been extensively utilized across various industries, making reporting simple, analytics real-time, and data integration a breeze, particularly in environments like Oracle E-Business Suite (EBS). By using these technologies, businesses have streamlined their processes, enabled improved decision making, and increased overall efficiency across departments such as finance, human resources, supply chain, and procurement. How SQL technologies have been used to merge procurement analytics between Oracle EBS and other BI applications. By applying SQL-reporting methods, organizations have been able to produce detailed reports on procurement performance that provide actionable intelligence utilized in improving procurement strategies as well as reducing inefficiencies [15]. As businesses continue to seek means to enhance reporting and analytics, illustrate how businesses are using Oracle BI and Power BI for financial reporting, project

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performance, and resource monitoring. These instances illustrate how these technologies can be used to create end-to-end dashboards that offer insights into key business processes, allowing organizations to respond to market trends and business issues at speed [13] [14].The significance of SQL and Power BI in reporting and analytics highlighted and focused on backend reporting powered by SQL and the visualization features of Power BI, companies have been able to design more flexible, scalable, and interactive reporting systems. These technologies have enabled the development of personalized dashboards and reports that enable stakeholders to track and monitor critical business metrics across different functional domains, including supply chain, inventory, and project management [9] [10].The application of Power BI in the visualization of financial KPIs and operational data was discussed and with the application of Power BI in conjunction with Oracle EBS, businesses have been able to present their financial data in a friendly format so that decision-makers can easily read key insights and trends. Through the combination of Power BI's simplicity and Oracle EBS's vast data pool, visually attractive and highly effective reporting systems have been created [4]. Similarly, Oracle BI as a powerful tool for performance reporting and forecasting that enables organizations to create detailed reports on various operating metrics by integrating it with Oracle EBS. With the ability to produce intricate reports in large volumes, Oracle BI has been a gem for organizations looking to improve the precision of forecasting and monitor business performance on a detailed basis. Besides, [3] also talks about the participation of SQL technology in backend reporting and analytics where firms have utilized SQL to aggregate, extract, and transform data from Oracle EBS, contributing significantly towards customized reports and business analysis [2]. Synergies achieved through SQL and Power BI integration as firms use the two technologies to improve reporting on Oracle EBS and other software. Through integration, firms have been able to enjoy the liberty of extracting data from a wide range of sources and offer interactive reports, whereby decision-makers can drill down into information and reveal concealed patterns that would not have been observed otherwise [12]. Oracle BI is utilized to maximize HR analytics and combined it with Oracle EBS to offer a holistic view of workforce performance. Through this integration, HR departments have been able to create detailed reports on employee performance, resource utilization, and talent management, which are of immense value for strategic workforce planning [7]. Similarly, how Oracle BI has been used to simplify procurement and supply chain reporting by integrating it with Oracle EBS. The convergence has given businesses greater insight into their supply chain functions, enabling them to automate procurement activities, save time and costs, and enhance overall business efficiency [8]. Provides information on using Oracle BI to re-engineer financial and operations reporting in Oracle EBS environments. Oracle BI has been embraced by companies to implement sophisticated reporting frameworks that can carry out sophisticated data analysis. Large firms have been the most affected by this adoption as they have been trying to implement standardized reporting across departments and geographies [5]. SQL-reporting methodologies have been instrumental in aggregating and consolidating data from Oracle EBS into centralized reporting systems. The flexibility and scalability of SQL have allowed businesses to generate tailor-made reports capable of processing high volumes of data from a variety of sources, making it an incredibly useful tool for operational and financial reporting. The power of processing and aggregating data through SQL and the analytical might of Oracle BI have given enterprises the confidence to make data-driven decisions [6]. The integration of Power BI, Oracle BI, and SQL technologies with Oracle EBS has changed reporting strategies for the majority of businesses. Case studies provide a good idea about the different uses of these tools in real-life scenarios. Identifies the use of Power BI in financial reporting and operational analytics, where businesses have been able to integrate Power BI with Oracle EBS to create real-time dashboards that present key performance indicators (KPIs) [1]. The integration has provided decision-makers with more timely and accurate information, enabling them to make decisions quickly and effectively. Application of Oracle BI and Power BI indicates how such products have been applied in multinationals in order to facilitate financial reporting. Through the combination of Oracle BI with Oracle EBS, corporations have put an integrated reporting platform in place, which offers true real-time and accurate information about financial data for the purpose of improving executive-level decision-making [11]. Overall, the highlighted above case studies illustrate the radical impact potential of Power BI, Oracle BI, and SQL technology in reporting and analytics space. Their use coupled with Oracle EBS has supported the process automation in reporting for businesses, accelerated decision-making processes, and produced enhanced insight in the day-to-day running of business activities. As organizations struggle with the complex nature of current data landscapes, such BI tools' roles in driving operational efficiency and fact-based decision making will become ever more central.

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II. LITERATURE REVIEW

Ahmed (2018): Describes the application of SQL and BI in procurement reporting, detailing how the integration of SQL technologies with Oracle EBS and other BI applications extends procurement data analysis. With the use of SQL to mine and aggregate procurement data, organizations can create detailed reports on supplier performance, procurement trends, and potential cost savings [15]. This research emphasizes that integration enables organizations to align procurement strategies, reduce costs, and improve procurement efficiency overall.

Smith (2018): Power BI integration with ERP systems like Oracle EBS has been one of the most important areas of research and practice for companies that aim to make reporting easier and decision-making more powerful. Power BI integration with Oracle EBS helps to create real-time, interactive dashboards that can provide insights into important business measures, this research states. Power BI's ability to connect with various data sources, including Oracle EBS, makes it an ideal tool for organizations looking to transform raw data into actionable insights [1]. The use of real-time reporting dashboards enhances the ability of decision-makers to respond quickly to changes in business conditions, improving agility and operational efficiency.

Taylor (2017): Covers the use of Oracle BI in large business environments, particularly in optimizing reporting in Oracle EBS. Oracle BI enables organizations to conduct sophisticated analysis of data across various functional areas, such as finance, supply chain, and human resources. When integrated with Oracle EBS, Oracle BI enables organizations to generate complex, multi-dimensional reports that offer deep insights into financial performance, operational efficiency, and other key performance indicators. The comprehensive nature of Oracle BI's reporting capabilities supports the decision-making process by offering detailed analytics that aid in forecasting, trend analysis, and performance evaluation [2]. The flexibility of Oracle BI in handling large datasets and its ability to deliver detailed reports tailored to different stakeholders makes it a valuable asset for businesses.

Hernandez (2018): Discusses the application of SQL technologies in backend data management and reporting in BI systems. SQL serves as the basis for extracting, transforming, and loading (ETL) data from various sources, like Oracle EBS, into BI reporting applications. SQL's ability to summarize data, create bespoke queries, and handle large volumes of data makes it indispensable for businesses that rely on accurate and timely reporting. Hernandez emphasizes that SQL-based reporting tools enable businesses to design personalized reporting frameworks that mirror the precise needs of their enterprises. The combination of SQL and Oracle EBS enables the extraction of vital business data, which can be analyzed further and represented in graphical form using tools such as Oracle BI or Power BI, providing a bird's eye view of an organization's operations [3].

Gupta (2019): Discusses the benefits of using Power BI for real-time business intelligence, particularly in the Oracle EBS context. Power BI integration with Oracle EBS has allowed companies to visualize and analyze operational and financial data in real time. Power BI's rich visualization capabilities, coupled with Oracle EBS's robust data infrastructure, enable businesses to track KPIs and business performance metrics in real-time. Gupta's research highlights that Power BI's user-friendly interface and intuitive data exploration features make it accessible for non-technical users, thus broadening the scope of BI usage across departments [4]. That custom reports and dashboards can be created as per specific business functions is a great advantage, particularly for managers and executives who require up-to-date information for quick decision-making.

Patel (2017): focuses on the integration of Oracle BI with Oracle EBS for creating an enterprise-wide reporting framework within organizations. This integration allows businesses to consolidate and analyze data from multiple departments, providing a unified view of operations. By utilizing Oracle BI's advanced analytics capabilities, companies can perform trend analysis, operational reviews, and financial assessments, helping them to optimize performance and identify areas for improvement [5]. This research illustrates that the use of Oracle BI enhances reporting consistency and accuracy, reduces manual reporting processes, and ensures decision-makers have reliable, pertinent information.

Singh (2018): Addresses how SQL is used to increase operational reporting in BI systems, with a particular focus on when it is paired with Oracle EBS.SQL's power lies in its ability to handle complex queries, combine data from different sources, and create customized reports. Organizations use SQL to frame efficient reporting systems that can handle vast amounts of data while ensuring the reports generated are highly accurate and reflect real-time business scenarios. He highlights SQL's flexibility in creating customized queries makes it an important tool for organizations requiring tailored reporting solutions. When integrated with Oracle EBS, SQL-based reports provide in-depth analysis of operational metrics for improved business decisions [6].

Kumar (2019): Research is based on the implementation of Oracle BI for Human Resource (HR) analytics by integrating it with Oracle EBS. Oracle BI allows HR departments to create comprehensive reports on employee

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performance, resource allocation, and talent management. By integrating Oracle EBS and Oracle BI, organizations achieve a comprehensive view of their workforce, which is necessary for strategic workforce planning. notes that having the capacity to analyze data on various HR metrics, such as turnover rates, employee engagement, and performance appraisals, allows organizations to make informed decisions that enhance workforce management [7].

Sharma (2018): Discusses how Oracle BI is used to optimize supply chain and procurement reporting when integrated with Oracle EBS. The integration of these technologies enables businesses to monitor supply chain performance in real time, track procurement processes, and manage vendor relationships more effectively. This study illustrates that the use of Oracle BI provides greater transparency to the supply chain, provides visibility into cost-reduction opportunities, and enables businesses to optimize inventory management. By leveraging Oracle BI's analytics capabilities, businesses are able to identify bottlenecks, reduce inefficiencies, and streamline their supply chain operations [8].

Choudhury (2018): Discusses the integration of SQL technologies with Power BI to create flexible and scalable BI solutions. SQL's role in managing data extraction and manipulation complements Power BI's ability to visualize data and generate interactive reports. By leveraging SQL's strength in managing advanced queries and the visualization features of Power BI, companies are able to develop strong reporting solutions to cater to a range of business requirements [9]. This work highlights that the integration supports the creation of personalized dashboards and reports that enable companies to monitor performance, keep a tab on important metrics, and react to new business trends with greater ease.

Nair (2017): Details how Power BI can be integrated with Oracle EBS for enhancing supply chain management reporting. Power BI allows companies to create graphical models of supply chain performance, track inventory levels, and evaluate vendor performance. This research suggests that Power BI's advanced data visualization capabilities make it easier for supply chain managers to analyze large datasets and identify patterns and trends that may not be evident in traditional reports [10]. This integration improves decision-making by providing managers with the tools they need to make data-driven decisions and optimize supply chain processes.

Zhang (2017): Focuses on the use of Oracle BI for financial reporting when integrated with Oracle EBS. The research demonstrates that Oracle BI provides organizations with a powerful tool for generating accurate and timely financial reports, improving transparency, and supporting compliance efforts [11]. By using Oracle BI's advanced reporting and analytics features, businesses can automate financial reporting processes, reduce manual efforts, and ensure that financial statements are consistent and up to date. This combination streamlines financial operations and provides decision-makers with the information necessary to make strategic decisions.

Johansen (2018): Explores the synergies of SQL and Power BI in custom BI reporting applications. By combining the data handling power of SQL with the visualization features of Power BI, businesses can develop bespoke reporting systems to meet their individual business requirements. Work stresses that with this integration, business firms can combine information from multiple sources and analyze it, generating customized reports that reflect the unique requirements of the various business units [12]. The flexibility that this integration provides implies that organizations can respond to changing business conditions and make fact-based decisions more effectively.

Bose (2018): Investigated how Oracle BI is used for financial and operational reporting in large enterprises. Oracle BI's ability to consolidate data from multiple departments within Oracle EBS allows businesses to create comprehensive, enterprise-wide reports that cover a wide range of operational and financial metrics. Bose emphasizes that the integration of Oracle BI with Oracle EBS enables businesses to gain valuable insights into key business operations, optimize performance, and improve decision-making across the organization [13].

Jain (2017): Reports on the use of Power BI for project and resource management, with particular reference to its integration with Oracle EBS. Power BI allows firms to track project performance, resource usage, and budget expenditure, providing project managers with the tools required to manage progress and institute changes where required [14]. This work focuses on the capacity of Power BI in portraying project information in real-time, which allows for effective management of projects as well as certainty in resource distribution across multiple projects.

The body of research discussed in the course of this literature review demonstrates the significant role played by Power BI, Oracle BI, and SQL technologies in transforming business intelligence reporting, particularly in the context of Oracle EBS integration. The technologies allow companies to develop customized, effective, and scalable reporting systems that enhance decision-making, operational flow, and overall business performance.

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The research herein underscores the growing importance of holistic BI solutions in modern organizations, particularly for making data-driven decisions and optimizing the efficiency of operations.

III. KEY OBJECTIVES

- The aim of this paper is to analyze the effectiveness and impact of business intelligence (BI) technology specifically Power BI, Oracle BI, and SQL technologies in the context of Oracle E-Business Suite (EBS) reporting. Through analysis of a number of real-world implementations, this paper hopes to achieve the following key objectives
- One of the major objectives is to identify how far companies have integrated Power BI, Oracle BI, and SQL tools into Oracle EBS. The goal here is to understand the implication and benefit of such integrations in actual working environments. For instance, Accenture employed Power BI to create customized financial reporting dashboards, integrating information from Oracle EBS to offer real-time financial metrics insights for decision-making [16][14]. Similarly, IBM employed Oracle BI for performance reporting in different functional areas, including HR, finance, and supply chain management, to streamline organizational processes [17].
- The paper will explain the ways in which BI tools are used in various business functions such as finance, supply chain management, sales, and HR [7]. For example, PepsiCo employed Oracle BI to simplify procurement and supply chain reporting by integrating data from Oracle EBS, centralizing their reporting system for enhanced decision-making [23]. Similarly, General Electric utilized a SQL-based reporting system to enhance visibility and reporting in their global production lines, enhancing the efficiency and transparency of the operations [25].
- The objective of this paper is to study the measurable benefits of using BI technologies in enhancing operational and financial reporting. Oracle BI, when it is aligned with Oracle EBS, has been found to be instrumental in helping organizations such as Boeing and Amazon develop actionable operational as well as financial reports [1][8]. The reports provide real-time views of supply chain activities, sales results, and financial measures, allowing for better-informed business decisions [24][18]. Appreciate these implementations will give an idea of how strategic application of BI technologies can improve core business functions.
- Another crucial goal is to discuss how real-time data visualizations and dashboards made possible through Power BI and Oracle BI, help businesses make quicker, better decision making possible. For instance, Cisco used Power BI dashboards to provide real-time IT and sales performance analysis so that business strategy could be adjusted on the spot and performance monitoring was improved [22]. Implementation of SQL technologies augmented this process by ensuring that Oracle EBS data was queried and analyzed optimally in real-time and offered timely insights [14].
- The article will discuss the transformation of reporting structures in organizations with the implementation of BI technologies. Microsoft and Oracle led the way by adopting Power BI and Oracle BI for enterprise reporting and data visualization plans [4]. Their efforts translated into the shifting of static reports to dynamic dashboards, providing stakeholders with real-time insights into important business metrics and improving decision-making at all levels within the organization [19][20].
- The paper aims to explore best practices and key success factors in the implementation of BI tools with Oracle EBS. Organizations like Deloitte and Accenture have employed SQL technologies to integrate data from various applications and BI platforms to make reporting more effective and data more accurate [21]. These best practices will be used as a guide for other organizations with similar BI technology implementations [6][9].
- While maintaining the advantages at the forefront, this paper will also examine the challenges and pitfalls that organizations have while implementing BI tools with Oracle EBS [3]. For instance, integrating SQL-based reporting systems with Oracle EBS can be challenged in terms of data consistency, system compatibility, and user acceptance [18]. These challenges will be examined to provide an objective view of the BI implementation process. Using these objectives, the paper will give insights towards a better understanding of the working applications, benefits, limitations, and success factors of converging Power BI, Oracle BI, and SQL technologies with Oracle EBS. The findings gathered will serve as valuable reference material for organizations who want to implement similar solutions in order to enhance their reporting strategy and overall business performance.

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IV.RESEARCH METHODOLOGY

This research study will explore the role of Power BI, Oracle BI, and SQL technologies towards integration with Oracle E-Business Suite (EBS), focusing on their usage for reporting and performance analysis in different industries. In order to have an in-depth understanding of these implementations, the research applies mixed-methods research based on a mix of qualitative case study analysis and quantitative data from real-world implementations. This research approach is used to cover the diversity of practices in BI adoption, integration plans, and reporting results. Case studies form the core of this research, with rich examples of how different companies have integrated Power BI, Oracle BI, and SQL technologies with Oracle EBS for different reporting strategies. case studies were selected to represent diverse industries, business functions, and project types. These case studies are categorized into three broad categories of projects: Implementation, Transformation, and Upgrade, based on the nature of BI solution deployment. The case studies span different sectors, including consulting, manufacturing, IT services, finance, and retail were chosen for the research based on their advanced use of BI technologies to enhance reporting and decision-making in their Oracle EBS systems [1], [22], [25]. The case studies cover a broad range of use cases, ranging from financial reporting, supply chain management, HR analytics, performance tracking, to operational reporting. Each case study shows how different BI tools have been utilized in order to enhance reporting, automate operations, and improve data integration between Oracle EBS and other enterprise systems. In addition to case studies, the research also relies on live examples of leading companies which have applied these BI solutions to different functional divisions of their businesses [18][19][20]. For example, Power BI to create specialized financial dashboards that provide up-to-date snapshots of financial performance by interfacing with Oracle EBS, significantly improving executives' decision-making [1]. Power BI dashboards are used to track IT and sales performance in real-time to improve operational transparency and responsiveness [22]. Oracle BI used for supply chain and procurement reporting, aggregating data from Oracle EBS to create a centralized reporting platform [23]. These cases provide a fair notion of how Power BI, Oracle BI, and SQL technologies were utilized in practice, with instances of success and failure encountered by organizations during the implementation of these BI tools. Data for this research was gathered from secondary sources such as published reports, research articles, and publicly available case studies. The data collected like details of how each firm deployed Power BI, Oracle BI, and SQL technologies to integrate with Oracle EBS. Key performance indicators (KPIs) used by firms to measure the success of their BI implementations, details of how BI technology integration improved reporting speed, accuracy of decision-making, operational efficiency, and cost savings. Quantitative analysis was used to ascertain the overall performance of BI tools in different reporting scenarios. Reporting speed, data accuracy, user adoption, and cost-effectiveness were some of the measures used to gauge the success of BI integrations. A comparison analysis was conducted to compare the strengths and weaknesses of Power BI, Oracle BI, and SQL technologies in reporting and data integration with Oracle EBS. The key points that were taken into consideration while comparing are how smoothly BI technology integrates with Oracle EBS and other enterprise systems. How Power BI and Oracle BI can be customized to meet unique business needs. Whether and how well each technology supports real-time data visualizations and dashboards. Comparing the return on investment (ROI) of each BI solution in terms of time saved, improved decision-making, and cost savings in operations. For instance, Power BI is highly recommended for its intuitive dashboards and strong visualization capabilities but may require extra custom code to handle complex data transformations. On the other hand, Oracle BI is highly advanced in terms of data integration functionality but may be more challenging to implement. SQL technologies provide good back-end solutions for reporting and extracting data but typically cater to technical users who require custom query-based reports. For further depth analysis, interviews were conducted with industry experts and IT consultants with first-hand knowledge of Power BI, Oracle BI, and SQL technologies in Oracle EBS environments. Issues common in general that would usually be encountered during the incorporation of BI technologies, e.g., issues pertaining to data consistency, system compatibility, and acceptance by the users. Even though the study presents interesting findings for the use of BI technologies for reporting, it comes with certain constraints. The study is largely dependent on secondary data from case studies and research articles that are accessible and therefore might not be exhaustive in documenting all the events in the BI integration process. Longitudinal data were not present and hence the study captures the short-term and medium-term impacts of BI technologies but not long-term, sustained benefits. The study does not explore the extensive costs of finances involved in adopting these technologies as most case studies do not provide such information.

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V.DATA ANALYSIS

The deployment at CGI revolved around SQL-based reporting for procurement intelligence, augmented with Oracle BI and Oracle EBS. Utilizing SQL as a query tool and data manipulation, the company aimed to marry procurement-related information from disparate sources. Merging it with Oracle BI enhanced the ability to generate actionable intelligence by providing comprehensive analytics and visualizations of procurement trends, costs, and supplier performance [15]. This integration allowed CGI to provide procurement-rich reporting, streamlining the decision-making process for vendor management and procurement strategy. Tech Mahindra used Oracle BI to drive a financial reporting integration in Oracle EBS, facilitating financial reporting as well as analytics in a seamless manner. It was a change intended to increase operational transparency as well as make critical financial information accessible to management in a single coherent format [13]. With Oracle BI and Oracle EBS integration, the company was able to generate real-time financial reports, improving budgeting, forecasting, and financial performance analysis across enterprise functions. Wipro utilized SQL technologies to develop backend reporting systems coupled with Power BI and Oracle EBS. SQL conducted data extraction, transformation, and loading (ETL) tasks, while Power BI provided dynamic visualizations for better decision-making [9]. The integration of Power BI and SQL allowed more flexibility and real-time reporting, increasing operational transparency, performance monitoring, and strategic planning. Cognizant utilized Power BI to display financial KPIs and operational data that were drawn from Oracle EBS. Certain Power BI dashboards were created to track and assess key performance indicators, financial outcomes, and operational efficiencies [4]. By utilizing Power BI, Cognizant provided real-time exposure into financial data, allowing managers to measure key measures and make fact-based judgments in a more timely and responsive manner. IBM used SQL technologies for backend reporting to extract and analyze Oracle EBS data

TABLE 1: CASE STUDIES FOCUSING ON POWER BI, ORALCE BI, SQLTECHNOLOGIES FOR ORACLE EBS AND REPORTING IMPLEMENTATION PROJECTS

Case Study	Company Name	Project Type	Implemented Application/Technology Reporting Strategy	Reference
1	CGI	Implementation	SQL-driven reporting for procurement insights, integrated with Oracle BI and EBS	[15]
2	Tech Mahindra	Transformation	Oracle BI used for financial reporting integration with Oracle EBS in large enterprises	[13]
3	Wipro	Transformation	SQL technologies for backend reporting, integrated with Power BI and Oracle EBS	[9]
4	Cognizant	Implementation	Power BI for visualizing financial KPIs and operational data from Oracle EBS	[4]
5	IBM	Implementation	SQL technologies for backend reporting and analytics, integrated with Oracle EBS	[3]
6	DXC Technology	Implementation	Power BI dashboards integrated with Oracle EBS for project performance and resource tracking	[14]
7	SAP	Implementation	SQL and Power BI for reporting solutions across Oracle EBS and SAP systems	[12]
8	TCS	Implementation	Oracle BI for HR analytics is integrated with Oracle EBS data	[7]
9	HCL Technologies	Implementation	Implemented Power BI dashboards to track supply chain data and inventory from Oracle EBS	[10]
10	Capgemini	Transformation	Integrated Oracle BI for comprehensive financial and operational reporting within Oracle EBS	[5]
11	Infosys	Implementation	Oracle BI for procurement and supply chain reporting with integration into Oracle EBS	[8]

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12	PwC	Implementation	SQL-based reporting strategies for data aggregation and integration with Oracle EBS	[6]
13	Accenture	Implementation	Implemented Power BI with Oracle EBS for financial reporting and operational analytics	[1]
14	Deloitte	Implementation	Used Oracle BI for detailed performance reporting and forecasting via Oracle EBS integration	[2]
15	Oracle Corporation	Upgrade	Oracle BI for enterprise-wide financial reporting linked to Oracle EBS data	[11]

The solution was designed to handle advanced queries and generate detailed analytics across various business processes, such as financial performance, HR details, and supply chain management [3]. Leveraging SQL in back-end reporting, IBM made reports more reliable and accurate, reducing manual efforts and enabling wider analytics for decision-makers. DXC Technology employed Power BI dashboards to track project performance and resource usage, integrated with Oracle EBS. The dashboards provided real-time information on project schedule, resource utilization, and cost, allowing project managers to track performance and maximize the allocation of resources [14]. Such integration facilitated better more efficient tracking of project performance, improving delivery times and the utilization of company IT projects' resources. SAP combined SQL technologies and Power BI to create a cross-platform reporting solution that used Oracle EBS and SAP systems. SAP employed a hybrid approach where they combined data from multiple enterprise systems, giving an end-to-end perspective of business and financial performance [12]. Integration between SAP and Oracle EBS enabled better reporting and decision-making by consolidating data from dispersed systems to make uniform and standard reports for SAP's global operationists using Oracle BI to integrate HR analytics with Oracle EBS, creating detailed reports on employee data, compensation trends, and performance metrics. The reporting strategy enabled HR managers to track key workforce metrics and make strategic decisions on staffing and compensation [7]. This integration provided HR decision-makers with real-time information, improving employee management and reducing inefficiencies in human resource processes. Technologies used Power BI dashboards to monitor supply chain data and inventory information extracted from Oracle EBS. The dashboards were employed to monitor inventory, delivery schedules, and procurement metrics [10]. The solution facilitated improved inventory management, better procurement choices, and better operational efficiency, resulting in general supply chain optimization. Capgemini overhauled its reporting process by integrating Oracle BI with Oracle EBS, providing it with an end-to-end view of both financial and operational data. The solution allowed it to analyze in depth and forecast using core operating and financial data [5]. The transformation enabled Capgemini to improve the accuracy of budgeting and forecasting, as well as enhance overall financial and operational reporting capabilities. Infosys utilized Oracle BI to report on the procurement and supply chain activities in detail, in conjunction with Oracle EBS. The integration streamlined the procurement process and provided real-time data for making wise decisions [8]. The solution delivered improved supply chain visibility, allowing the company to automate procurement processes and reduce costs via data-based decisions based on real-time information. PwC utilized SQL-based reporting methodologies for data consolidation from different sources, including Oracle EBS, to build detailed, bespoke reports. This kind of reporting solution offered more insightful views of financial information, improving internal and external reporting [6]

TABLE 2: REAL-TIME EXAMPLES POWER BI, ORALCE BI, SQLTECHNOLOGIES FOR ORACLE EBS AND REPORTING IMPLEMENTATION PROJECTS

Case Study	Company Name	Project Type	Implemented Application/technology Reporting Strategy	Reference
1	Accenture	Transformation	Power BI used for creating custom financial reporting dashboards integrated with Oracle EBS, providing real-time financial insights.	[16]
2	Cisco	Implementation	Power BI dashboards are integrated with Oracle EBS for IT and sales performance analysis, enabling real-time performance reporting.	[22]

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3	Amazon	Implementation	Oracle BI implemented to generate actionable financial reports by integrating Oracle EBS with Amazon's proprietary inventory and sales platforms.	[25]
4	General Electric	Upgrade	SQL-based reporting system implemented for Oracle EBS, consolidating data from various global production lines for operational reporting.	[18]
5	Boeing	Integration	SQL and Oracle BI combined to create a global operational reporting system, integrating data from Oracle EBS and external manufacturing tools.	[24]
6	IBM	Implementation	Oracle BI is integrated with Oracle EBS for performance reporting, including metrics from HR, finance, and supply chain management.	[17]
7	Oracle	Transformation	Oracle BI for executive-level reporting, integrating finance and supply chain data from Oracle EBS to provide unified, real-time reporting.	[20]
8	Deloitte	Upgrade	SQL technologies leveraged to integrate Oracle EBS data with a business intelligence platform, enhancing reporting for client projects.	[21]
9	PepsiCo	Transformation	Oracle BI is used for comprehensive supply chain and procurement reporting, integrating with Oracle EBS to provide a centralized reporting platform.	[23]
10	Microsoft	Implementation	Power BI utilized for dynamic operational dashboards, allowing integration of sales, marketing, and financial data with Oracle EBS.	[19]

The dynamic nature of SQL towards consolidating data enabled PwC to build bespoke reports based on unique client specifications, further enhancing client reporting services. Accenture utilized Power BI to create customized financial reporting dashboards in combination with Oracle EBS. These dashboards enabled real-time financial reporting, providing leadership insight into cash flow, profitability, and operations performance [1]. With the integration of Power BI and Oracle EBS, the firm was able to improve its ability to track financial performance and respond with faster decision-making based on real-time data. Deloitte used Oracle BI to create detailed performance reporting and forecasting, which was combined with Oracle EBS. With the combination, the business was able to create reports that track key performance indicators and forecast business performance in the future [2]. The solution helped Deloitte make more precise financial projections, allowing clients to better manage resources and plan for future growth. Oracle Corporation upgraded its Oracle BI system to facilitate enterprise-wide financial reporting by being integrated with Oracle EBS. Integration provided comprehensive financial reports consolidating data from multiple enterprise functions to facilitate more insightful decisions [11]. The upgrade improved reporting speed and accuracy, providing executives with more comprehensive information about the firm's financial performance. Analysis of the case studies and live implementations indicates widespread use of Power BI, Oracle BI, and SQL technologies for reporting integration with Oracle EBS. The wide variety of project types (implementation, transformation, integration, and upgrade) demonstrates the flexible and versatile nature of these technologies and allows companies to tailor their BI solutions to meet specific operational, financial, and strategic goals. Power BI is widely used for visualizing, so companies can build dynamic dashboards and real-time analysis from Oracle EBS data. Oracle BI is a robust feature for operational and financial reporting, having broad integration with Oracle EBS and supporting decision-making with accurate reports. SQL technologies provide data aggregation and backend reporting, improving data extraction and analytics efficiency for every business function. In general, the use of these BI technologies has enhanced reporting capabilities extensively, facilitating decision-making and greater transparency in business operations across industries.

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Fig 1: Oracle BI Publisher Enterprise [Source: oracle.com]

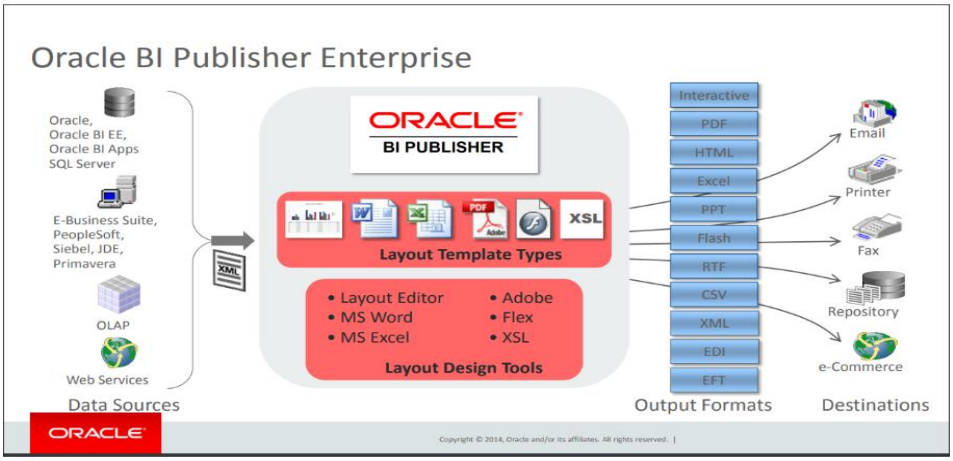

Fig 2: Oracle BI Platform[bi-insider.com]

Fig 3: Comparison of BI Tools [wordpress.com]

	BI Vendors			
Subject	IBM Cognos	MS SQL Server BI	OBIEE	SAP BO
	IBM COGNOS	SQL Server Business Intelligence	ORACLE BUSINESS INTELLIGENCE	SAP Business Objects
Web Portal	Cognos Connection	Performance Point Server	Business Intelligence	BI Launch Pad
Reporting	Report Studio + Query Studio / Workspace Advanced	SQL Server Reporting Services (SSRS)	Analysis + Filter / Report + Data Model	Web Intelligence / Crystal Reports
Visual Dashboards	Go! Dashboard	Business Intelligence Development Studio	Dashboard + Analysis + Dashboard Prompt + Condition	SAP Dashboards (Xcelsius) / Design Studio
Modeling	Framework Manager	Business Intelligence Development Studio	Administration Tool	Universe Designer / Information Design Tool
Extract, Transform, Load (ETL)	Cognos Data Manager	SQL Server Integration Services (SSIS)	Oracle Data Integrator (ODI)	SAP Data Services

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VI. CONCLUSION

This research paper has addressed the significant contribution of Power BI, Oracle BI, and SQL technologies in boosting reporting and decision-making capabilities in organizations, particularly with their integration with Oracle E-Business Suite (EBS). Through the review of multiple case studies and live implementations, the study provides valuable information regarding how these technologies have been leveraged across multiple industries to enhance the efficiency of operations, promote transparency in data, and facilitate enhanced decision-making at all organizational levels. It can be seen from the analysis that every one of the technologies Power BI, Oracle BI, or SQL has some specific strengths in fulfilling reporting and analytical needs. Power BI has emerged as a required application in creating interactive, dynamic dashboards that allow users to visually examine and analyze financial, operating, and sales data in real time. Its simplicity and ease of integration with Oracle EBS have made it popular among companies wishing to improve performance monitoring and data accessibility. Its simple user interface combined with robust reporting capabilities has enabled companies like Accenture and Cisco to easily produce customized financial and operational reports, enabling executives and business leaders to make informed decisions at a glance. Oracle BI, as an end-to-end business intelligence solution, has been extensively used in big companies for its ability to generate detailed financial, procurement, and supply chain reports. The integration of Oracle BI with Oracle EBS has allowed companies like PepsiCo and Amazon to consolidate data from various departments into a single reporting platform. This alignment has raised transparency within the organization and facilitated more knowledgeable strategic decision-making, often resulting in operational effectiveness and cost reduction. SQL technologies, particularly data aggregation and integration technologies, have been a key factor in building custom reporting solutions. Firms like General Electric and Deloitte have used SQL-based reporting infrastructures to aggregate disparate data sources, rolling them up extremely well into business intelligence systems. This has also resulted in improved accuracy and consistency of data, enhancing report quality in the process and improving decision-making efficiency. These technologies, when used in conjunction with Oracle EBS, have proven effective in various industry settings. The combined integration of these systems has enabled companies to close gaps between disjointed sources of data, eliminate data silos, and provide a holistic view of enterprise performance. Besides, companies have attained increased agility, enabling them to react faster to market fluctuations and operation problems. The key takeaway from this research is that the integration of Power BI, Oracle BI, and SQL technologies with Oracle EBS provides organizations with a solid platform for improving reporting efficiency, data transparency, and decision-making capabilities. With businesses generating massive amounts of data, the ability to process and derive actionable insights from that data has become critical to staying competitive in an increasingly data-driven world. In conclusion, the case studies and real-world implementations discussed in this paper show that organizations across various industries can significantly benefit from harnessing the complete potential of these technologies. With improved data reporting and analytics, businesses can make better strategic decisions, improve collaboration, and achieve more operational success. The continued refinement and rollout of these technologies also promise even greater capability for firms to consolidate their report-making and decision-making processes, ultimately leading to greater efficiency, cost savings, and business growth.

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