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Original Research Article

Digital Transformation of Inventory Planning and Control in Saudi Industrial Supply Chains: Evidence from Oracle Fusion and Power BI Applications

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Abstract: ***Purpose***: In this review paper, a framework is provided for the alignment of the Vision 2030 plan in relation to the digital transformation of inventory planning and control in Saudi industry. This paper focuses on the use of ERP software, Oracle Fusion Cloud SCM and business intelligence platform, Power BI, in relation to the conversion of inventory control as a reactive accounting task into a proactive industrial strategy through ERP transactions, replenishment algorithms, master data management, and business intelligence dashboards. Design/methodology/approach: A narrative approach is used in conducting the literature review, where contemporary research in relation to ERP, business intelligence, supply chain analytics, inventory control, and digital transformation are reviewed with a focus on literature published during the 2020-2025 period. ***Findings***: Through the use of the Oracle Fusion ERP system and Power BI business intelligence platform, it will be possible to develop a framework for converting inventory control to a proactive process by enhancing data discipline, standardizing processes, and improving control on inventory transactions. ***Practical Implications***: Saudi industry can take advantage of the ERP-BI combination in order to manage stock outs, slow-moving inventories, high working capital, and other inefficiencies. Originality/value: This paper adds value in terms of an applied framework connecting Oracle Fusion and Power BI to inventory control and Vision 2030 objectives.

Keywords: Digital Transformation, Inventory Planning, Inventory Control, Oracle Fusion Cloud SCM, Microsoft Power BI, Supply Chain Analytics, Business Intelligence, Saudi Vision 2030.

1 INTRODUCTION

Saudi Arabia's industrial sector is experiencing an unprecedented wave of digital transformation since the implementation of Vision 2030, which makes industrial localization, logistics capability, and diversification of the economy beyond oil key drivers of growth. The issue of inventory planning and control is central to this process because companies require a proper supply of raw materials, spares, consumables, and end products to ensure continued production operations. Fragmented and unreliable inventory management is still common in many firms due to scattered and siloed information, reliance on manual worksheets, incomplete data sets, delays in demand information, and a lack of integration among different functions like purchasing, receiving, storing, and accounting. This results in excessive stock of some items, stock

outs for other goods, inefficient carrying costs, and poor response to supply disruption. The problem is not only one of data management because inventory management affects working capital, service level, supplier performance, production planning, and customer commitments.

ERP and BI can resolve all those problems provided they are used together as part of the decision support framework. Oracle Fusion Cloud SCM offers such features as transactional processing, item master management, procurement integrations, receiving, issuing, transferring, valuation, and inventory planning. Power BI offers advanced capabilities related to visualization, drilling down, creation of executive dashboards, exception detection, and performance storytelling. As is explained in the model paper attached to this proposal, BI tools are able to turn data into insights, increase operational efficiency, enable real-time reporting, and help decision makers transition from historic reporting to dynamic analysis. All those advantages are relevant for inventory planning and control because the improvement of the performance of an inventory management system does not rely solely on data acquisition, but on an understanding of demand fluctuations, risk of lead time, obsolete stocks, material consumption behaviour, supplier reliability, and financial exposure.

The title of the proposed review article is "Digital Transformation of Inventory Planning and Control in Saudi Industrial Supply Chains: Evidence from Oracle Fusion and Power BI Applications". The paper should identify the potential for using Oracle Fusion and Power BI in improving inventory planning discipline, requirements for creating reliable data through proper governance, and the benefits of adopting these solutions with regard to the objectives of Vision 2030. It should not be a case study of one particular firm but a systematic review of the literature aimed at proposing a review framework applicable to the needs of industrial managers, supply chain analysts, finance professionals, and transformation leaders. The novelty of the work will be in the link between ERP transaction integrity and BI-supported analytics. It is necessary in Saudi Arabia because industries are expected to increase productivity, localize production, enhance competitive edge, and boost supply chain robustness while remaining compliant with auditing procedures and governance principles.

2 LITERATURE REVIEW

The concept of digital transformation in supply chains presupposes a shift from standalone IT solutions to integrated use of data, cloud platforms, analytics, automation, and collaborative processes that can optimize planning, execution, and control. Inventory management systems become part of digital transformation because they move the focus of attention from routine inventory review to continuous visibility. The literature indicates that enterprise systems are most helpful for achieving coordination when business processes, master data, and accountability are also transformed. Similarly, BI research suggests that fast and accurate decision-making can be facilitated with the help of dashboards, data warehouses, ETL processes, and predictive analytics. The model paper attached to this proposal divides BI tools into six groups, namely data warehousing, online analytical processing, data mining, dashboards, data visualization, and ETL processes, and states that software platforms like Microsoft Power BI and Oracle BI offer real-time dashboards, performance measurement, forecasting, and operational KPIs. Although the paper focuses on accounting processes, it is applicable to inventory planning, which is both an operational and a financial function.

The list of challenges in inventory planning that can be found in all literature sources includes inadequate visibility of demand, imprecise forecasts, failure to monitor suppliers' lead time, high levels of safety stock, duplicates in item records, and lack of accountability for slowly moving items. ABC classification, economic order quantity, reorder points, safety stock levels, and cycle counting are among the basic techniques for inventory control that are highly recommended. Yet, they can be applied successfully only if inventory data is accurate and current, which can be ensured by ERP systems. Oracle Fusion Cloud SCM allows for creating standardized item master, location master, inventory organization, sub inventory, receipts, issues, transfers, and valuation processes. Clean item records make it possible to effectively use Power BI tools, allowing users to track key metrics, such as days on hand, inventory turnover, demand variability, aged purchase orders, supplier delivery performance, and exposure to obsolete stocks.

Moreover, the literature stresses that dashboards do not necessarily result in better performance if data quality is poor, users lack skills, executives fail to sponsor a project, integration with existing systems is difficult, and change management fails. In other words, a dashboard is an instrument that requires certain preconditions for successful application. Otherwise, it becomes an informative tool only. This conclusion is consistent with the discussion of BI adoption obstacles mentioned in the model paper as involving poor data quality, difficulty in system integration, high costs, skills gap, change resistance, data security issues, and governance obstacles. In view of the complexity of the operations of Saudi industrial firms that often conduct activities

on several plants, suppliers, projects, and warehouses across the country, it is essential that digital transformation is implemented as an entire operating model involving Oracle Fusion transactions, Power BI visualizations, data governance rules, and executive actions.

In addition, inventory planning and control have a strong impact on sustainability and resilience because excess stocks lock in resources and pose the risk of becoming waste due to expiration, obsolescence, corrosion, or technical redundancy. Stock outs imply that a company faces production stoppages, emergency purchases, high logistics expenses, and customer dissatisfaction. Digital tools help mitigate those threats by offering a closed loop. Slow-moving stock and consumption deviations can be identified with the help of Power BI, while Oracle Fusion will ensure smooth replenishment and traceability of transactions.

3 METHODOLOGY

For this paper, the author has chosen a narrative review methodology that is applicable to applied technological and managerial subjects. The reason why it is different from the empirical survey methodology is that it synthesizes ideas and develops the concepts into a practically implementable framework, rather than providing the analysis based on evidence only. The sources have been chosen according to their relevance to the topic of interest; they include academic journals, vendor publications, industry publications, and articles dedicated to the digital transformation of the supply chain processes. The literature review focused on materials published from 2020 to 2025, though earlier publications could be included in case of necessity, when covering basic principles of BI and inventory.

The methodology followed four stages. First, literature on the topic was screened to see whether there was a direct connection between the source and the topic of interest, including BI, ERP, inventory, inventory planning, business intelligence in operations, supply chain analytics, and industrial digital transformation in particular. Then, all findings were coded into five thematic categories, namely system integration, planning intelligence, dashboard visualization, data governance and controls, and vision 2030 value realization. In the third step, evidence was organized in two illustrative diagrams and two tables; the first one depicts Oracle Fusion – Power BI inventory architecture, and the second one represents how the framework aligns with Vision 2030 priorities. Additionally, table 1 compares classical inventory controls and digitally-enabled inventory controls, whereas table 2 includes a governance matrix of KPIs for implementation. Finally, recommendations for practice were provided in the paper.

The review has been done in an intentionally prescriptive way, meaning that not every Oracle Fusion or Power BI implementation results in specific benefits for companies. Nevertheless, certain conditions are mentioned to be present in order for the benefit to appear, including good-quality master data, defined ownership, integration of transactional processes and dashboards, consistent definitions of key performance indicators, role-based access, and regular decision making forums (S&OP sessions, etc.). This kind of reasoning is aligned with the model paper, where BI technology has been described as an instrument helping to make better financial and managerial decisions through skill full governance and implementation.

4 RESULTS AND DISCUSSION

Four key findings emerge from the review. First, Oracle Fusion makes the greatest contribution to the process standardization and data discipline. Industrial inventory control relies upon the accuracy of attributes, locations, approvals, timing, and valuation entries. Oracle Fusion enables such control via its procurement, inventory, order management, costing, and accounting modules. This helps minimize discrepancies between movement and accounting records. With accurate inventory receipt, issuance, transfer, and adjustment entries, planners can feel confident about using these entries for replenishment planning and control purposes. Of course, this does not mean the absence of subjective judgments. However, it certainly minimizes the uncertainty of fragmented records.

Second, Power BI makes the greatest contribution to visibility and decision communication. Despite the fact that enterprise resource planning (ERP) systems hold significant amounts of transaction data, managers require aggregated, visualized, and exception-based reporting. This goal can be achieved via transforming Oracle data exports, dataflow, API calls, or warehouse feeds into a dashboard. For example, the inventory dashboard will visualize the statuses of stock positions, demand profiles, supplier lags, slow-moving items, and abnormal consumption rates. Such dashboards are particularly useful for top management representatives since they will minimize reliance upon time-consuming spreadsheet packs. In addition, managers can navigate from a strategic KPI to a particular plant, category, supplier, and item level in order to pinpoint the reason behind it.

Third, integration of Oracle Fusion and Power BI produces a synergistic effect. On the one

hand, Oracle Fusion without BI is likely to produce accurate transactions without significant managerial insights. On the other hand, Power BI without Oracle Fusion is likely to generate visually appealing charts based on inaccurate transaction data. With the combined use of Oracle Fusion and Power BI, companies will get an opportunity to design a control tower for inventory. Such a framework will enable inventory segmentation, replenishment review, exception tracking, and ongoing improvement initiatives. For instance, an item with high inventory value and low movement can be flagged in Power BI, analyzed in Oracle Fusion transaction history, assigned to an owner, and passed for further disposition decisions.

Fourth, the successful implementation of this approach will depend on organizational governance. Many inventory dashboards fail to achieve their goals due to KPI inconsistency. One team calculates inventory turns based on average value, whereas another team considers ending balances, and another team uses quantity as a base for calculation. The same applies to such KPIs as fill rate, stock-out ratio, slow-moving threshold, and safety stock. To solve this problem, one needs to develop a KPI dictionary agreed upon by the Finance, Supply Chain, Operations, and Internal Audit departments. In addition, the company should delegate responsibility of data stewardship for master item creation, unit of measure conversion, category classification, supplier registration, and warehouse location rules. Finally, role-based access rights are essential since inventory data may include confidential information about supplier prices, project costs, and manufacturing operations.

The relevance of the framework for Vision 2030 is obvious. Industrial growth requires a reliable supply chain, an effective production process, and a digitally-enabled business model. At the same time, inventory control is related to each of these aspects. While excess inventory reduces capital efficiency, shortages negatively affect manufacturing reliability. Using Oracle Fusion and Power BI, industrial companies will get opportunities to design their own transparent, resilient, and analytical operating models. Localization will benefit because local suppliers and production networks will require accurate demand signaling and supplier performance monitoring. Sustainability will benefit because improved inventory planning will lower waste, emergency transportation, and unnecessary purchases. The workforce will benefit because planners, accountants, engineers, and procurement professionals will become data users rather than report recipients.

This framework is not perfect. BI dashboards may simplify the complex reality if managers take color-coded indicators for answers rather than questions. Oracle Fusion records may lag real movements if warehouse personnel delay posting. Forecasting can make planning easier, but it will not eliminate the unpredictability of the market. Finally, cyber security and data access controls will have to be considered, given that the cloud platform integrates operational and managerial perspectives. Therefore, implementation of this framework is better designed as a phased transformation that includes such steps as stabilization of master data, standardization of processes, creation of dashboards, regular review meetings, and introduction of predictive analytics.

5. Proposed Inventory Transformation Framework

The proposed framework has four layers: Enterprise Supply Chain Data Layer (mostly covered by Oracle Fusion), Planning & Control Intelligence Layer, BI Analytics Layer, Executive Action, and Governance Layer. The Enterprise Supply Chain Data Layer comprises data such as item masters, inventory organization data, purchases, warehouses, suppliers, past demand history, and cost data related to finance. Planning & Control Intelligence Layer encompasses planning policies, re-supply rules, ABC/XYZ categorization, safety stock considerations, lead-time assumptions, approvals, and exceptions. BI Analytics Layer features data visualization, such as converting controlled data into dashboards, scorecards, heat maps, and drill-downs, with Power BI as the tool of choice. Last, but not least, the Executive Action & Governance Layer involves decision-making activities by executives through Sales and Operations Planning (S&OP) meetings, procurement sessions, inventory optimization committees, and financial reviews. A closed feedback loop exists in this framework as actual performance data from production, purchases, warehouses, and finance departments is compared against planning assumptions. Stock-outs in case there are adequate levels of stocks in the system are investigated regarding data, reservations, lead-time changes, and demand spikes. Excessive inventory is investigated based on minimum order quantity, demand obsolescence, supplier capabilities, and approvals. Increased working capital relative to production level requires collaboration between finance and supply chain management teams regarding inventory mix. The closed-loop structure is the key advantage in this model as it enables data and actions to be transformed into improved data and vice versa. As the starting point of implementation at Saudi Arabian industrial companies, a dashboard portfolio may prove effective. Four dashboards are needed to start with: executive inventory value, turns, and days of

supply; service risk, which includes stock-out risk, backorder, critical spare availability, and material affecting production; financial exposure that considers slow-moving, obsolete, excess inventory, and high-value materials; and lastly, supplier risk related to lead-time risks, overdue purchase orders, and any quality issues delaying material receipt. Each of these dashboards needs to include the owner, refresh schedule, source table, calculation rules, and escalation procedure.

6 Tables and Evidence Mapping

Table 1: Comparison of traditional and digitally enabled inventory planning and control

Dimension	Traditional inventory control	Oracle Fusion + Power BI enabled control
Data source	Spreadsheets and disconnected warehouse reports	Integrated ERP transactions, governed datasets and live dashboards
Planning rhythm	Periodic review after stock problems occur	Continuous exception monitoring and S&OP-linked review
Decision logic	Experience-based ordering and manual reorder checks	Rules-based replenishment, segmentation and scenario analysis
Visibility	Limited by department and site	Enterprise view by item, plant, supplier, category and value
Risk control	Reactive investigation of stock-outs and obsolete items	Early alerts for shortages, excess stock, slow movement and supplier delays

Table 2: KPI governance matrix for Oracle Fusion and Power BI inventory transformation

KPI area	Sample KPI	Primary source	Governance owner	Decision use
Availability	Stock-out rate; critical item availability	Oracle inventory and order data	Supply chain planning	Escalate shortages and revise safety stock
Efficiency	Inventory turns; days of supply	Oracle cost and quantity balances; Power BI model	Finance controller	Monitor working capital and aging stock
Quality of planning	Forecast error; demand variance	Demand history and planning tables	Planning manager	Adjust forecast assumptions and segmentation
Supplier performance	Lead-time reliability; overdue purchase orders	Procurement and receiving data	Procurement lead	Supplier follow-up and contract review
Obsolescence	Slow-moving and obsolete inventory value	Inventory aging data	Inventory governance committee	Disposition, transfer, write-off or consumption plan

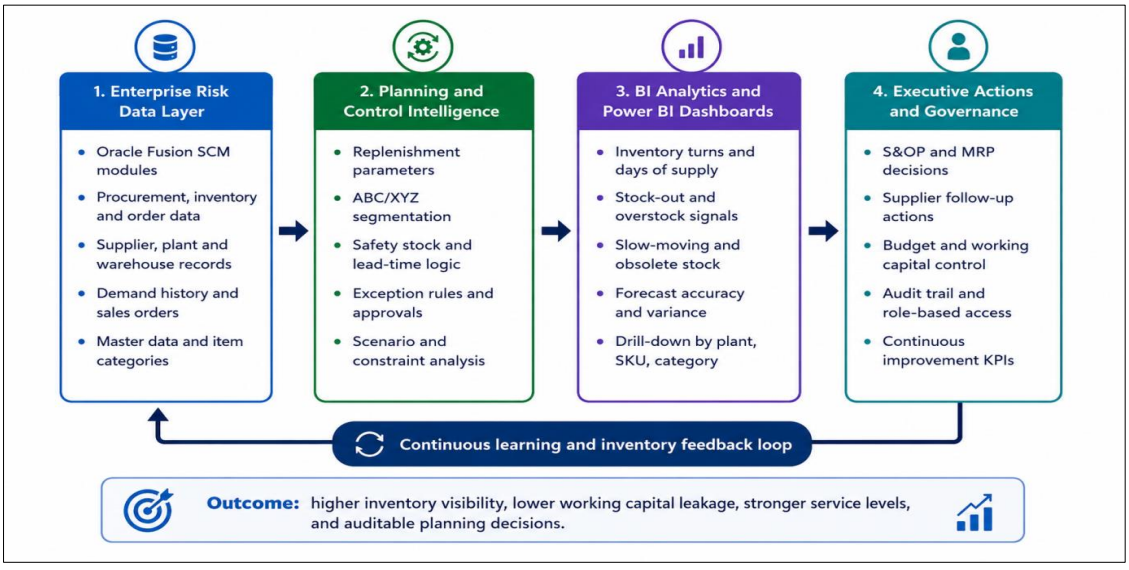

Figure 1: Digital inventory planning and control architecture using Oracle Fusion and Power BI

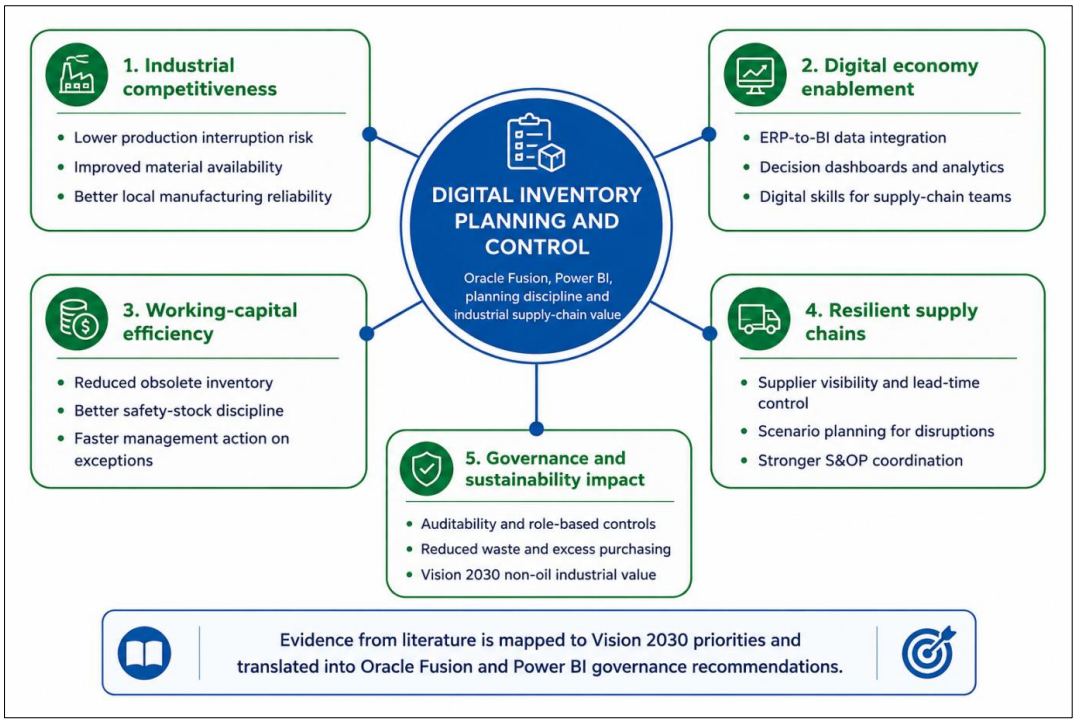

Figure 2: Vision 2030 aligned review framework for digital inventory transformation

7 Practical Implications

These practical implications will be especially relevant for industrial executives, supply chain managers, finance controllers, IT leaders, and internal auditors. Executives can now see better how inventory affects industrial competitiveness and working capital. Instead of asking their teams for more spreadsheets, executives can look at exceptions, trends, and accountable owners in Power BI dashboards. Supply chain managers will benefit from improved planning routines, as Oracle Fusion ensures transaction discipline, whereas Power BI allows seeing planning deviation. Finance professionals will have better insights into inventory valuations, provisions, write-offs, and capital occupied by materials. IT leaders will be able to see an integration path that would combine ERP data, governed datasets, and self-service analytics while maintaining access control. Internal auditors will appreciate the traceability provided by the system records and evidence in dashboards.

Moreover, training will prove indispensable here. Users need to know not only how to use dashboards but also how the data is created. Warehouse users must post transactions in time. Planners must maintain parameters and examine exceptions. Procurement teams need to update lead times for suppliers. Finance teams must reconcile inventory values and specify financial thresholds. Without this common knowledge base, digital inventory control might become nothing more than reporting, despite all the technology. Successful companies will implement the proposed solution as part of their operational discipline, including people, processes, data, and governance.

Additional Implementation Considerations

One more important implementation lesson is that inventory transformation needs to be assessed not only operationally but also financially. People should not celebrate new dashboards just because they are sophisticated, but they must consider if these dashboards reduce decision delays, improve planning disciplines, increase trust in stock records, and help managers take action in order to avoid shortages and/or excesses. Thus, digital inventory control will be a managerial competence supported by Oracle Fusion and Power BI. One more important implementation lesson is that inventory transformation needs to be assessed not only operationally but also financially. People should not celebrate new dashboards just because they are sophisticated, but they must consider if these dashboards reduce decision delays, improve planning disciplines, increase trust in stock records, and help managers take action in order to avoid shortages and/or excesses. Thus, digital inventory control will be a managerial competence supported by Oracle Fusion and Power BI. One more important implementation lesson is that inventory transformation needs to be assessed not only operationally but also financially. People should not celebrate new dashboards just because they are sophisticated, but they must consider whether these dashboards reduce decision delays, improve planning disciplines, increase trust in stock records, and help managers take action in order to avoid

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8 Limitations and Future Research

A major limitation of the review is that it relies on literature synthesis to build a theoretical framework rather than empirical validation of the framework through primary data collection from Saudi industrial enterprises. For example, future researchers could conduct case studies in manufacturing, energy services, chemicals, mining, and logistics organizations using Oracle Fusion and Power BI. Future quantitative studies could investigate the impact of ERP-BI integration on inventory turns, stock-out, forecast error, obsolescent inventory, and working capital. Interview studies could investigate user acceptance, data ownership issues, and barriers to governance. Finally, predictive models for inventory management optimization could be developed, for example, based on machine learning algorithms for demand forecasting, anomaly detection, and supplier risk scores.

Another potential avenue for future research concerns the relationship between inventory digitalization and sustainability. Overproduction results in waste, while inefficient planning can trigger last-minute emergency shipping, which increases greenhouse gas emissions. Future researchers could study whether Oracle Fusion and Power BI enable reductions in the organization's carbon footprint by enhancing purchase accuracy and minimizing logistical movements. Another research direction concerns the issue of localization, which is a major policy priority in Saudi Arabia. In particular, future research could explore the contribution of inventory analytics to the development of local suppliers, localization strategy, and industrial clusters.

9 CONCLUSION

Digital transformation of the inventory planning and control process is a necessity for Saudi Arabia's industrial supply chains. Oracle Fusion enables the process level through transaction integration, master data management, inventory control, procurement coordination, and financial tracking. Power BI enables the analytics dimension through dashboards, drill-downs, visualization, exceptional reporting, and executive communication. When Oracle Fusion and Power BI are governed together, organizations can achieve better inventory levels, better material availability, increased planning transparency, and more disciplined working capital practices.

In conclusion, technology itself is not enough. The effectiveness of Oracle Fusion and Power BI depends on data quality, KPI governance, user skill set, executive support, and closed-loop action routines. In light of the goals of Vision 2030, the proposed framework would enhance industrial competitiveness, digital economy development, supply chain resilience, sustainability, and evidence-based decision-making. Consequently, organizations looking to digitally transform inventory planning should go beyond individual reporting solutions and implement a fully integrated control architecture based on Oracle Fusion and Power BI.

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