Two-Tier ERP with SAP S/4HANA Cloud and deployment possibilities

SAP S/4HANA Cloud Product Management & Co-Innovation

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Executive Summary

This paper examines the typical challenges faced by organizations in this age of Digital Transformation in multi-tier deployment of ERP solutions and debates the various deployment options of Two-Tier ERP with SAP S/4HANA Cloud.

The dynamics of the rapidly changing business environment that issues challenges for the CxOs in multi-tier ERP deployment will be discussed. We will explore the issues posed by organic and inorganic growth of organizations for meeting market demand and gaining competitive advantage. We will also look into the complexities of managing the extended supply chain involving the upstream and downstream stakeholders for gaining competitive advantage for sourcing and selling goods.

We will be providing a point of view on three deployment options of Two-Tier ERP:

1. Headquarters-Subsidiary model: This model can be adopted by organizations employing an inorganic growth policy aided by Mergers & Acquisitions. The Headquarters runs on SAP S/4HANA On-Premise or SAP ERP, and the Subsidiary runs on SAP S/4HANA Cloud. This provides an independent ERP system for the Subsidiary to deliver on its innovation requirements.

2. LoB Operations on Cloud: This deployment model is suitable for organizations adopting the organic growth approach, either by opening new LoBs or by taking over LoBs currently managed by third party service providers into their own purview. In this case the legacy processes run on SAP S/4HANA On-Premise or SAP ERP and the new LoBs run on SAP S/4HANA Cloud.

3. Ecosystem on Cloud: This deployment model seeks to address the organizational challenges in collaborating with external stakeholders like Suppliers, Dealers, etc. and provides a platform for enabling modern day Supply Chain game-changing processes like Vendor Managed Inventory (VMI) and Collaborative Planning, Forecasting and Replenishment (CPFR).
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1. Introduction

1.1 The age of Digital Transformation

Digital Transformation is probably one of the greatest paradoxes that C-level executives in an organization have to deal with in the present times. Almost 90% of respondents in a 2015 global survey of managers and executives conducted by MIT Sloan Management Review and Deloitte anticipate that their industries would be disrupted by digital trends. The discomforting finding was that only 44% admitted their organizations were adequately preparing for the disruptions to come. The gravity of the situation can be further gauged from the IDC report “FutureScape: Worldwide CIO Agenda 2016 Predictions” stating “One-third of the top 20 firms in industry segments will be disrupted by new competitors within five years”. The same IDC report forecasts that, by 2018, “70% of siloed digital transformation initiatives will ultimately fail because of insufficient collaboration, integration, sourcing or project management.”

Before solving this riddle for CxOs, we must first understand what is Digital Transformation. Any business is dependent on 3Ps, namely, People (workforce), Processes and Partners (extended supply chain comprising suppliers, customers etc.). Digital transformation essentially deals with percolation of technology in all aspects of a business affecting all the 3Ps, resulting in realignment of People, remodeling of Process and reengagement with Partners.

1.2 Addressing CxO’s challenges

Clearly, technology plays a pivotal role in Digital Transformation. Hence, the role of CIOs is now of utmost strategic importance in the context of businesses. A survey by SAP in 2016 claimed that CIOs lead 37% of digital transformation efforts in the enterprise, while IT teams are pushed to the sidelines. The biggest dilemma that a CxO must solve is how to pave the path for digital transformation in an organization without jeopardizing the core business processes. Globalization has changed the dynamics of the recent business environments, which has given birth to the following problems for the CxO’s:

- Most businesses grow inorganically through mergers & acquisitions. This aggravates the CxO’s problems because of the need to onboard newly acquired subsidiaries, which might be at different geographical locations with different sets of established business processes, into existing IT systems or integrating the disparate IT systems of multiple entities.
- Organizations are also expanding organically, through diversification of Line of Businesses (LoBs). There is a need to adapt the IT systems for new LoB-related business processes.
- Businesses are venturing into new markets. To meet ever-increasing demand, there is a quest to extend the supply chains (suppliers, dealers and customers) and eventually their ecosystem. Supporting the extended supply chain and integrating with the disparate IT landscapes of the stakeholders are causes of concern for the CxOs.

**Source:**
1. 2015 global survey of managers and executives conducted by MIT
To address these issues, Gartner, in 2014, introduced the concept of Bimodal IT which dealt with the concept of an organization’s IT landscape operating in two different modes. Mode 1 focuses on the stable and traditional areas in the business processes requiring stability, and Mode 2 supports the innovative and disruptive aspects of the business that require agility. Both modes need to co-exist for the success of Digital Transformation in an organization. McKinsey has also introduced the idea of Two-Speed IT, which talks on similar lines about “fast speed, customer-centric front end running alongside a slow-speed, transaction-focused legacy back end”. The preferred choice for a CxO is to onboard the subsidiaries, new LoBs or other supply chain partners in Mode 2, or the agile IT infrastructure. The CxO’s choice of this agile IT solution will be centered around 4 factors:

- Cost
- Time to go-live
- Quality
- Integration with existing/traditional/Mode 1 IT landscape

ERP providers have been exploring possibilities to address the CxO’s pains. In this quest, SAP, the world’s leading cloud ERP provider, has addressed Two-Tier ERP deployment requirements with the SAP S/4HANA Cloud offering. In the subsequent sections, we will discuss the definition of Two-Tier ERP, SAP’s offering in this space, and how this helps address the current business challenges.

Richard St. Pierre, President, C2 International LLC

It was December, and I said I would have 10,000 new users by the end of January. When I walked in the office on January 2, SAP S/4HANA Cloud was up and running. So, yes, I trust SAP to carry us forward into the future.
2. What is Two-Tier ERP:

SAP’s Two-Tier ERP strategy with SAP S/4HANA Cloud is in line with Gartner’s statements on Bimodal IT, which positions two different modes as explained in the previous section. SAP’s Two-Tier deployment provides enterprises with an opportunity to standardize the end to end business processes across multiple tiers. By selecting SAP S/4HANA Cloud for their Tier 2, customers get the benefit of Software as a Service (SaaS) which can be implemented by standard template, thereby reducing the cost and ancillary IT expenses by having pre-configured solution.

SAP S/4HANA provides a choice of deployment; one product line addresses the needs of both Tier 1 and Tier 2.

![Figure 1: SAP's Two-Tier ERP Model](image)

2.1 Differentiators:
- Single-vendor solution for multiple tiers for reduced cost and complexity using one simplified data model and harmonized user experience across tiers
- SAP best practices built in to the application
- Out of the box integration between two tiers
- Leading-edge technologies managed by SAP to accelerate Tier-2 efforts in the Digital Economy (HANA, Machine Learning, internet of things (IoT)).
- SAP’s localization solutions cater to legal, business and language requirements across countries
- Exception-based reporting capability, facilitating insight-to-action
- Process integration with Tier 1 for transactional business processes

2.2 Enabling Connecting Business Processes:
SAP’s Two-Tier deployment with SAP S/4HANA Cloud provides integration capability among multiple tiers. The integration helps enterprises to standardize the process across its tiers and provide process visibility by using centralized analytics. The following are ways how integration is done between multiple tiers:

By choosing SAP S/4HANA Cloud we are arming ourselves with an enterprise system that will support our aggressive growth and align with our business requirements.

Carole McCluskey, CTO, MOD Super Fast Pizza Holdings LLC
2.2.1 Seamless Data Flow
As an example, financial consolidation processes using a SAP Business Planning and Consolidation (BPC) system can be deployed on SAP S/4HANA On-Premise or SAP ERP and integrated with SAP S/4HANA Cloud. Such an integration will allow the Tier 1 to easily access financial data for consolidation, and the BPC functionalities like Planning, Budgeting, Financial Forecasting can also be leveraged.

![Data Flow between Multiple Tiers](image)

2.2.2 Process integration
In many situations, there is a need to connect multiple systems like SAP S/4HANA On-Premise or SAP ERP in Tier 1 with SAP S/4HANA Cloud in Tier 2 for daily activities. Take an example of finished goods which are being delivered from Tier 1 to Tier 2 or vice-versa.

Where business require integration between two tiers, there is always a manual effort required in creating the Sales Order and Purchase Order documents in two different tiers. Manual intervention can lead to process errors and inconsistencies. With the SaaS deployment model, businesses can automate above-mentioned process. A typical use case is a drop shipment process from Tier 1.

Organizations also look to manage customer credit centrally in Tier 1. The difficulty is optimizing credit control for the companies which use multiple, distributed systems. By leveraging S/4HANA Cloud in Tier 2 with pre-packaged integration content and with delivered accelerators, business can optimize credit management with a centralized credit policy. Similarly rebates and contracts can also be managed centrally from the Tier 1.

Organizations also tend to centralize their planning and monitoring functionality. SAP S/4HANA Cloud combined with the supply chain integration add-on for Integrated Business Planning supports the collection and transformation of data in SAP S/4HANA Cloud and creation of orders in both tiers from SAP Integrated Business Planning (IBP). It facilitates the following:

- Integrate master and transactional data transferred from multiple tiers to IBP
Integrate transactional data transferred from IBP such as planned orders, purchase requisitions, and sales order confirmations to both tiers.

![Figure 3: IBP Integration](image)

For seamless operation of the business processes, it is essential to integrate key elements of master data like the product master, business partner and other masters synchronously between Tier 1 and Tier 2. Master data can be governed centrally by SAP Master Data Governance (MDG) for all the tiers or directly sent from Tier 1 to Tier 2 or vice-versa. In both cases, integration is done by using SAP Data Replication Framework (DRF) or with the help of whitelisted API’s.

![Figure 4: Master Data Harmonization](image)

Often, the enterprise needs to either compare performance across multiple tiers or incorporate data from various Tier 2 processes within a geography, line of business, or industry cluster to analyze trends. Hence, Two-Tier ERP must be able to support centralized analytics. This integration can be achieved through following options:

- Data extraction
- Data simulation
- Remote access
2.3 Possible deployment options
Organizations can leverage SAP’s Two-Tier ERP with SAP S/4HANA Cloud in three possible ways:

1. Headquarters-Subsidiary
2. Extended Supply Chain
3. LoB specific processes

Many challenges related to connecting the business processes as explained in the section 2.2 can possibly be solved by the deployment modes stated above. The figure below shows deployment scenarios and related implementation approaches.

<table>
<thead>
<tr>
<th>Scenario 1: Headquarter &amp; Subsidiary</th>
<th>Scenario 2: Supply Chain Network with Suppliers, Dealer &amp; etc.</th>
<th>Scenario 3: Separate Cloud ERP for specific Business Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Premise SAP S/4HANA</td>
<td>Complex</td>
<td>Same legal entity with two different Company Codes, one in On-Premise and one on SAP S/4HANA Cloud</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The complex business processes remains on On-Premise, innovative new business processes moved to SAP S/4HANA Cloud</td>
</tr>
</tbody>
</table>

Implementation Approach:
- Headquarters and Subsidiaries are different legal entities
- Headquarter runs on On-Premise, Subsidiary runs on SAP S/4HANA Cloud
- Seamless integration using APIs provided by SAP
- Large Corporation on On-Premise
- Vendors/Dealers/Sub-Contractors on SAP S/4HANA Cloud
- Visibility using CDS views/APIs across the entities
- Process orchestration using APIs between the entities
- Consolidation at the On-Premise ERP or SAP S/4HANA Cloud

Figure 5: Centralized Analytics

Figure 6: Two-Tier ERP deployment options
3. Headquarters-Subsidiary Model

3.1 Challenges in current Headquarters-Subsidiary setup

As mentioned in section 1.2, a great deal is known about the growth and foreign investment behavior of multi-national companies, MNCs. MNCs are taking advantage of the market opportunities by expanding their business in new regions or growing inorganically by acquiring new businesses by mergers and acquisitions. The growth trends of MNCs show a significant share of growth achieved through mergers and acquisitions, and this trends will only continue to accelerate in the future. There is a significant increase in worldwide mergers and acquisition activities as per a study conducted by the Institute of Mergers, Acquisitions & Alliances. (Figure 7).

![Figure 7: Statistics of worldwide Mergers & Acquisitions by the Institute of Mergers, Acquisitions and Alliances](image)

The challenge to corporates is to adapt to a changing environment and to seize growth opportunities. In response to these challenges, companies are adopting more flexible organizational structures. In such MNCs, the headquarters-subsidiary set up becomes the primary channel by which the firm is managed, consisting of a headquarters and one or more geographically dispersed subsidiaries.

**Source:**
3. Statistics of worldwide M&As by Institute of Mergers, Acquisitions and Alliances
4. www.referenceforbusiness.com
Figure 8: Statistics of Headquarters and equity affiliate locations of the largest multinationals worldwide

The headquarters-subsidiary relationship aspect of an MNC is similar to the principal-agent relationships with headquarters as the principal and the subsidiary as the agent. The headquarters cannot accomplish all the decision-making on its own without having the insights on its subsidiaries’ actions. Similarly, the subsidiaries cannot be given all the decision rights since their local interest might differ from that of headquarters, and an alignment is required between the headquarters and subsidiary. This constitutes a classic control problem of how headquarters-subsidiary relations should be governed and managed.

Headquarters struggle to:

- Drive common business processes into the subsidiaries
- Have visibility into subsidiaries’ operations
  - To track the subsidiaries’ performance
  - To perform group-level planning, profitability analysis, consolidation and reporting

Subsidiaries struggle to:

- Move faster and innovate without waiting for directives from the headquarters
- Be flexible and adapt to specific regional market trends
- Have efficient touch points with headquarters

The requirements of the subsidiaries are quite different from those of the headquarters, as both address different business needs – and are influenced by the economic and socio-political situations of host countries and other interest groups. Often the traditional software used by the headquarters may not be best suited for a subsidiary due to its high cost and inflexibility.
3.2 Dependency between headquarters and subsidiaries

In a typical Headquarters-Subsidiary setup, the processes run between headquarters and subsidiaries at varying levels of independence. This level of independence is often based on the history of the formation of the subsidiaries:

- **Independent subsidiary** - Subsidiaries run their business processes independently, and the relationship between the headquarters and subsidiary tends to be limited. Independent subsidiaries update headquarters only on specific occasions like periodic financial transactions. e.g. – Subsidiaries of MNCs which are a group of several companies or are engaged in constant Mergers & Acquisitions.

- **Dependent subsidiary** – Subsidiaries running planning and part of execution at headquarters with parts of processes at subsidiaries based on templates rolled out to the subsidiaries. These subsidiaries report back to headquarters for consolidation and visibility scenarios. e.g. – Subsidiaries of MNCs created through organic growth.
3.3 Two-Tier ERP in Headquarters-Subsidiary setup

As stated in section 2, SAP S/4HANA Cloud is a single-vendor, tier two, public cloud solution. The semantic compatibility between the SAP S/4HANA Cloud data model and S/4HANA On-Premise makes SAP’s Two-Tier ERP strategy the best choice for deployment in a headquarters-subsidiary setup of MNCs.

SAP S/4HANA Cloud is delivered with end-to-end core business processes for independent subsidiaries and also provides the ability to set up end-to-end business processes between headquarters and subsidiaries with tailored SAP-delivered tools.

The headquarters runs on SAP S/4HANA On-Premise or SAP ERP, while the subsidiary runs on SAP S/4HANA Cloud; this offers a best-in-class Two-Tier ERP landscape which provides:

- A consistent data model and taxonomy between the headquarters and subsidiary
- A consistent user experience across headquarters and subsidiary
- Native integration that supports end-to-end business processes between the headquarters and subsidiary

![Figure 11: SAP S/4HANA Two-Tier ERP strategy for Headquarters and Subsidiary setup](image)

SAP S/4HANA Cloud, the intelligent, next-generation ERP Cloud business suite is a best fit for subsidiaries. It has advantages of:

- Low cost and rapid deployment for the newly acquired subsidiaries
- Simplified and standardized business process based on industry best practices which will help the lean business requirements of subsidiaries
- Easy extensibility with native integration of subsidiaries to other SAP solutions and open interfaces
- Core functionality for financial planning, consolidation, and profitability that works across subsidiaries and headquarters
- Localization supporting subsidiaries across geographic locations
- Reduced IT dependencies on headquarters, due to SaaS deployment model of SAP S/4HANA Cloud.
- Innovations like Machine Learning can be adopted first in the subsidiaries and then gradually percolated throughout the organization
4. LoB Operations on Cloud

4.1 Introduction:

It can be daunting for companies to manage critical operations, especially given the increasing size and complexity of operations in an organization. A June, 2016, IDC study of US companies’ intentions for building or replacing software applications reported that companies maintain more than 500+ server products from 150+ commercial ISVs on average; their users depend on a highly-varied mix of 150+ desktop products, and approximately 30% are open source or some mix of free or freemium applications. To add to the complexity, the same study found that 58% of new applications are not a direct replacement for an existing application, and about 60% of these will be created by an external ISV as opposed to an internal IT developer.

There are limitations and challenges with these kind of heterogeneous applications:

- Long cycles of maintenance with minimal innovation
- Limited access to the best new capabilities
- More effort in maintaining customizing and personalization

IDC’s predicts that over the next 5 years there will be an increasing demand for the individual line of business to be hosted by third parties. The figure below describes the demand of each LoB by industry.

**Source:** 5. IDC Report, June 2016
Some industries will have a set of core administrative applications for which the investment, unique IT skillsets, and business process change required by decommissioning a key app and setting up a similar SaaS service will be onerous. Often in these situations companies can adapt bi-modal approach which leverages the SaaS mode of deployment. The following are business challenges leading companies to choose a SaaS deployment model for a particular LoB:

- Existing LoB is managed by service provider / third party, but the company would like to manage by themselves using standardized processes
- New LoB in set-up phase, but IT skill set to manage process in-house not available

Generally, companies would like to adapt industry-leading best practices by simply replacing their internal systems with SaaS solutions. Shared support models, centralized functions and other horizontal applications are perfect candidates for this.

As part of an extension/expansion strategy, the core can be maintained on Tier 1 and new functional modules can be added as SaaS services which are extensions to the core application and deployed on Tier 2. This type of deployment model ensures long-term integration and consistent IT support for the companies by using the same architecture.

The following are some examples where the SaaS deployment mode can be adopted:

- Centralized Plant Maintenance
- Shared Services for Finance – A/R and A/P function centralization
- Centralized Quality Functions

Let us go into details of each function.

4.2 Centralized Plant Maintenance:

Centralized plant maintenance brings facilities management and maintenance groups into one organization; this ensures the consistency of control of standards and procedures across the organization. This approach is more efficient, the quality of repairs and installations is improved, and maintenance processes are more consistent. This mode of business is particularly common among large groups of companies that share a common organization for asset maintenance.

Let us understand the business challenges currently faced by industries:

- **Inefficient collaboration** - Modern supply chains rely on highly specialized contributions and seamless collaboration. The harmonized, consistent data that is a prerequisite for efficient processes is often missing.
- **High Cost** - Managing costs requires transparency on maintenance activities – “too much” as well as “not enough” maintenance results in inefficiencies due to too-high maintenance costs or costs for unplanned downtimes and repairs. A large amount of operations may be outsourced, and a large volume of spare purchases may be required for asset management.
Let us explore how SAP’s Two-Tier ERP with SAP S/4 HANA Cloud addresses the above challenges. In SAP’s SaaS deployment approach where Centralized Plant Maintenance is managed on SAP S/4HANA Cloud and other operations on SAP S/4HANA On-Premise or SAP ERP, the following benefits can be realized:

- Plan upcoming maintenance work and find the requisite resources to execute maintenance activities and distribute to specific area where the maintenance is needed more effectively.
- Gain a full view of asset status across tiers to **mitigate breakdowns**. Reduce maintenance costs, while synchronizing labor, material, equipment, and schedules.
- Implement predictive maintenance, a proactive approach for asset management based on having organization-wide asset data in a central repository.
- Find the most efficient maintenance strategy across tiers so that assets are not over-maintained, risks are under control, and value (performance vs. cost) is maximized.
- Enable **real-time insights** of asset performance for timely, relevant decisions across tiers.
- Centralize collaboration with OEMs using SAP Asset Intelligence Network.

The above figure depicts the process with Centralized Plant Maintenance in SAP S/4HANA Cloud and other functions running on SAP S/4HANA On-Premise.
4.3 Shared Services for Finance – A/R and A/P functions are centralized

Shared services for finance is common in organizations striving to harmonize their finance processes. Companies choose this model to reduce costs arising from decentralization and to increase strategic flexibility. This kind of practice facilitates gaining a cost advantage from offshoring. The finance function in such an environment is responsible for a wide range of activities from managing the accounts and reports to analyzing the data needed to support management decision making. They also often handle day-to-day payment transactions. The expectations are not only to report the numbers, but also to do other activities which leads to decision making. This becomes even more difficult in the heterogenous environment where organizations have distributed systems managed with different ERP applications.

The current business challenges faced by the CxOs in a shared services for finance operating model are as follows:

- Managing financial visibility across the tiers in a distributed systems landscape with disparate master data, configuration, etc
- Lack of real-time visibility of the cash across the distributed systems leads to larger cash buffer
- Financial governance concerns across the tiers which increases the risk associated with compliance requirements like SOX
- Inconsistent data view across the tiers leads to increased manual labor related to data reconciliation

In SAP’s Two-Tier ERP with SAP S/4HANA Cloud deployment model provides a solution where finance is managed on SAP S/4HANA Cloud with other core operations managed either at SAP S/4HANA On-Premise or SAP ERP or SAP S/4HANA Cloud. The benefits can be realized as listed below:

- Centralized view of the current cash position at SAP S/4HANA Cloud with liquidity forecast, bank statements with the opening and closing balance at the individual tiers for improved cash and liquidity planning
- Improved management decisions because of real time visibility of the cash buffers
- Finance as a shared service model, with improved finance governance supporting compliance with standards like SOX
- Single code line and semantic data consistency facilitates and reduces reconciliation efforts and error potential

4.4 Centralized Quality Function:

In the realm of quality management in today’s digital age, a considerable amount of focus is placed on the maturity and evolution of technology and processes. However, it is important to note that the element of “quality culture” continues to play a central role along with many other operations. The implementation of ISO practices for
standardizing Quality Management processes makes it easier for organizations to abide by auditing guidelines through a Centralized Quality Management system.

The way quality culture is embedded within an organization has a lot to do with the effectiveness of quality management.

The major hurdles for organizations in implementing Centralized Quality Management are listed below:

- Non-standardized process across the system, with each tier following different standards and approaches
- No flexibility in adapting the processes and requirements which are unique to individual locations or tiers
- Training requirements are high – training is required for the quality technicians who are placed in different tiers, which may result in less skilled technicians performing inspections

SAP’s Two-Tier ERP with SAP S/4HANA Cloud provides the flexibility for organizations to deploy quality management LoB on Tier 2, which is managed as a centralized function.

Typically, a quality inspection is done during movement of a product – into the warehouse or from the warehouse. The information of the stock movement is communicated to SAP S/4HANA Cloud, in Tier 2. The system will post the statistical goods receipt and create an inspection lot with quality notification. The person who gets the notification will go to the respective location from where the information is communicated, inspect the product, and record the results in the application. The detail of acceptance or rejection is sent back to the Tier 1 system, which will act accordingly.

By using the SAP S/4HANA Cloud solution for centralized quality management, the following benefits can be realized:

- **Process standardization** – process is standardized across the organization, thereby reducing the time and effort involved for a quality inspection
- **Easy to adopt innovations** – quarterly innovations in SAP S/4HANA Cloud enables organization to receive these benefits automatically through upgrades conducted by SAP
- **Availability of skilled workforce** – as quality is being managed centrally, training programs ensure the workforce gets the adequate technical knowledge to perform the inspection
- **Cost reduction** – as the training requirement is minimized, costs associated are also reduced
5. Ecosystem on Cloud

5.1 Challenges for modern Supply Chains

Collaboration is the essence of impactful supply chains capable of succeeding in the long run. Supply chain is primarily a cost-saving LoB in any organization. Engineering and re-engineering of business processes internally over the years has left little scope for further cost optimization. In order to gain competitive advantage on the cost front, organizations are gradually exploring methods to collaborate with the other supply chain stakeholders like suppliers, sub-contractors, dealers, etc. Insufficient collaboration can lead to the “bullwhip effect”. Modern day businesses with multiple tiers of suppliers, sub-contractors and distributors make it imperative for Large Enterprises (LEs) to have clear visibility along the length and breadth of process chains to minimize the occurrence of overstock or stock outs. Lack of actual consumer demand insights and real-time inventory reports makes modelling an agile and responsive supply chain impractical. Speed-to-market and quality issues are other important areas where multi-tiered supply chains face challenges. According to the Supply Chain Resilience Report 2015 by insurance company Zurich and the Business Continuity Institute, 72% of the respondents claimed they did not have full supply chain visibility.

Another challenge organizations often face is developing new suppliers and dealers, mainly due to lack of capital and infrastructure on the latter’s part.

5.2 Recent trends in Supply Chain

To gain competitive advantage in the cost front, LEs are outsourcing most of their manufacturing processes. In most cases, LEs outsource their manufacturing to other geographies for gaining cost benefits. According to McKinsey's report in 2012 titled “Manufacturing the future”, advanced economies are experiencing a $342 Billion trade deficit in 2010, compared with $140 Billion in 2000.

Supply chain innovations have led to processes like Multi-level Subcontracting, where the Original Equipment Manufacturers (OEMs) own the goods along the process of subcontracting from one subcontractor to another for value addition. In such cases, having a visibility of operations at the subcontractor location is essential for the LE’s supply chain planning. It becomes more challenging when the LEs need to execute this process in different geographies without the presence of someone physically from their side who can continuously provide accurate progress reports. Efficient execution entails syncing of real-time inventory data from the subcontractors’ ERP system. A similar kind of information is also required from the ERP systems of dealers and distributors to realize the process of Collaborative Planning, Forecasting and Replenishment (CPFR®).

The concept of Vendor Managed Inventory (VMI) has emerged as one of the game changers for organizations striving to take supplier collaboration to the next level. VMI is a business model where the supplier takes full responsibility for maintaining an

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**Source:**
agreed inventory on behalf of the buyer, usually at the buyer’s consumption location. The onus of the inventory is with the supplier and is passed on to the buyer only when the demand arises at the buyer’s end. This practice is also a very effective way of developing suppliers who are lacking adequate infrastructure. This is a symbiotic relationship which benefits both the buyer as well as the supplier.

5.3 Two-Tier ERP in supply chain collaboration

Let us understand the problems and possible solutions of supply chain collaboration using Two-Tier ERP architecture through a model company from the automotive industry. This is an industry which requires extensive collaboration between OEMs, suppliers and dealers and is plagued by lack of visibility along the supply chain.

![Figure 14: A typical Automotive supply chain](image)

Figure 14 depicts a typical automotive supply chain. The processes in brief are as follows:

1. The suppliers sell spares directly to OEMs. The raw materials are mainly sent directly to the subcontractors from the suppliers with the ownership of the OEMs for multilevel subcontracting.
2. The OEMs usually pay directly to the subcontractors along the subcontracting process.
3. The final level of assembly/ manufacturing is usually done by the OEMs in their own premises.
4. The finished goods and spares are shipped from the OEMs to the distributors. The distributors are usually in charge of a geography or zone. The distributors generally cater to multiple OEMs.
5. The distributors sell the finished goods and spare parts to the dealers. The dealers are usually dedicated to a single OEM. The dealers are the direct point of contact with the customer for sales and after sales services.

The major problem faced by OEMs is lack of visibility from both ends of the supply chain. This impedes accurate forecasting, and at times the suppliers and
subcontractors have to bear the burden. The subcontractors do not have visibility regarding the Work in Progress inventory at the previous level of subcontracting. A large share of OEMs have subcontractors either in their own premises or in close proximity, sharing the facilities like warehouses of the OEMs. The OEMs are always looking to develop new suppliers and subcontractors to meet the increasing global demand for automobiles. Most of these new supplier/subcontractors lack both IT strategy and infrastructure and look to the OEMs for support in this regard.

For dealers and distributors, major problems can arise due to overstock or shortage of spare parts, which severely hinders after sales services. Forecasting of inventory is a major challenge for the OEMs due to lack of visibility at the dealers’ end. Bloomberg claimed in a report published in 2013 that 40% of the global automotive industry is facing bottlenecks caused by long and diffuse supply chains. The most pressing need is a forecasting mechanism which can be dynamically adjusted according to the changes in actual demand. Managing high volumes of sales orders and purchase orders from distributors/dealers and suppliers/subcontractors is another cause of concern for the OEMs. This requires intense manual effort.

In SAP’s Two-Tier ERP with SAP S/4HANA Cloud, the OEMs use SAP S/4HANA On-Premise or SAP ERP, while the suppliers, subcontractors, dealers and distributors can use SAP S/4HANA Cloud. The benefits can be realized as below:

1. The stakeholders can choose to share selective information regarding their inventory to the OEMs leveraging the Two-Tier ERP architecture. This preserves sensitive information on their side from being disclosed in case of their association with competing OEMs.
2. The OEMs, owing to the native, real-time integration capabilities of Two-Tier ERP, can automatically receive inventory status from dealers and distributors. This information can be effectively used by the OEMs for planning in a Two-Tier ERP setup with the integration of SAP IBP. The process in turn reduces the burden that is passed on to the suppliers and subcontractors due to sudden, unplanned demand.
3. Stock outs can be reduced and service levels improved at the dealer’s end.
4. The subcontractors can be given visibility of inventory from the previous level of subcontracting.
5. The fast go-live periods for customers on SAP S/4HANA Cloud can help the OEMs onboard new stakeholders rapidly across the supply chain. The subscription model of SAP S/4HANA Cloud does not require capital expenditure which makes it very affordable for a typical stakeholder in the extended automotive supply chain.
6. The automation capabilities like Purchase Order to Sales Order and Billing Doc to Supplier Invoice reduces the manual effort in executing these processes, leading to cost and workforce optimization along the supply chain.
7. The semantic compatibility of data throughout the supply chain facilitates easy modelling of customized analytical reports leveraging SAP Cloud Platform (SCP). This supports exception based, real-time reporting for the OEMs paving the path for digitally transformed supply chain.

**Source:**

6. Conclusion

In today’s age of digital transformation, MNCs are building their software strategy to serve an extended global enterprise by relying on a Two-Tier ERP model. In such a model, the combinations are endless. The above study covered the three most important and widely used Two-Tier combinations (Headquarters-Subsidiary, LoB solutions in Tier 2 and Supply chain ecosystem) and presented arguments why SAP S/4HANA Cloud is a best in class Two-Tier ERP landscape for these combinations.

Implementation of SAP’s Two-Tier ERP solution encourages growth opportunities with increased profitability and decreased operational costs by delivering the SAP S/4HANA Cloud solution with its advantages:

- SAP best business practices for business processes
- A Cloud infrastructure with innovative technologies like machine learning etc. to build competitive advantage in the Digital Economy
- Fast speed to market
- The integration needed to leverage corporate shared services and resources
- Harmonized user experience
- Country-specific localized solutions to speed adoption
- Simplified IT infrastructure and reduce IT costs
- Actionable insights for faster response to changing the business
- Visibility, control and governance for the corporates

The below figure reiterates the value proposition of SAP S/4HANA Cloud as a Tier 2 solution in different Two-Tier ERP scenarios.

![Figure 15 Two-Tier ERP deployment value proposition](image-url)