

2018

Feasibility of Supply chain on Cloud

ACADEMIC PROJECT – TERM IV
ANUBHAV GOPAL & ITI GARG

PROF. GANESH N. PRABHU | IIM Bangalore

Table of Contents

Acknowledgements.....	2
Executive Summary.....	3
Supply Chain Management.....	3
Cloud Computing	4
Cloud Architecture	5
Advantages of Cloud Technology.....	5
Supply Chain Management on Cloud.....	6
Benefits of Cloud-based SCM.....	7
Factors impacting adoption of cloud	8
Supply Chain Management – Industry Perspective	9
Healthcare.....	9
Beverages.....	10
Manufacturing	10
Retail	11
Automotive	12
Agriculture	13
Customer Interviews.....	13
Reasons for not migrating to cloud	14
Pricing Models.....	15
Modules not shifted on cloud	15
Recommendations	15
Appendix 1 – Survey.....	18
References	22

Acknowledgements

We would like to express our gratitude towards Professor Ganesh N. Prabhu for encouraging us to take up this topic and guiding us throughout the project. We would also like to thank Professor Suresh D N for his assistance throughout the project.

A special thanks to SAP for providing us with the opportunity to work on this sponsored project. Last but not the least, we would like to thank all those people from different companies who took out time for us to answer our queries.

Executive Summary

Due to changing external environments and increasing uncertainty, it has become essential for companies to be prepared for every scenario. Today, almost every company employed heavily in supply chain and logistics has an on-premise supply chain management system to handle the day-to-day activities efficiently. Another option for these companies is to migrate this supply chain system on cloud.

There are various benefits of having a supply chain system on cloud such as reduction of costs, option to scale up/down whenever needed, ability to see data real-time and make decisions accordingly, accurate forecasts, pricing model based on usage etc. In spite of many benefits, many companies are still very sceptical about migrating to cloud.

We have tried to understand the supply chain models followed in different industries and their pain points. We have also interviewed people from various companies to understand the reasons behind not migrating to cloud. Some reasons include network issues, huge investment in on-premise system infrastructure, security doubts, no control over data etc.

Finally, we have come up with a list of recommendations to address each of these problems.

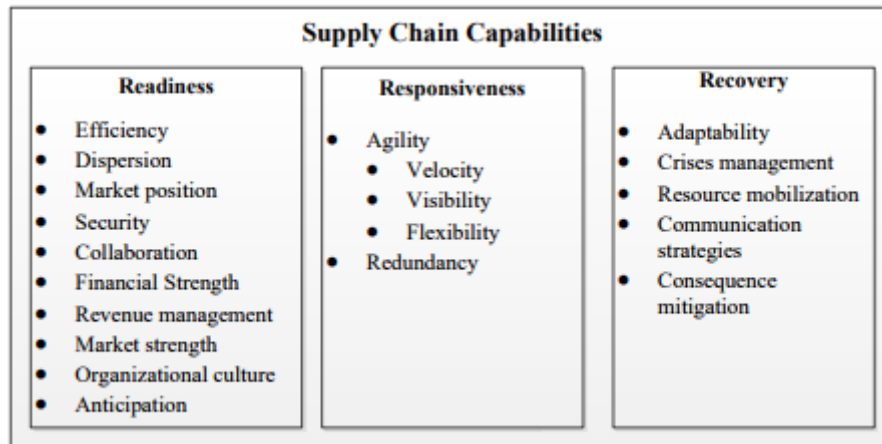
Supply Chain Management

As per the definition given by International Centre of Competitive Excellenceⁱ

'Supply chain management is the integration of business processes from end user through original suppliers that provide products, services and information that add value for customers.'

Today, this system is incorporating optimization, faster deployment speed, agility and flexibility, real-time information processing and automation. The focus is on basic functions like transportation and logistics, warehouse upgrades, product capability etc. But companies are also looking for the capability to support their global supplier networks. They are also looking to cut costs on their infrastructure as much as possible while maintaining health and profitability.ⁱⁱ

The diagram below shows the capabilities generally required from a supply chain system.ⁱⁱⁱ



There are various risks involved in a supply chain system:

- Internal firm risks such as Process risk or Control risk
- Internal supply chain risks such as Demand risk or Supply risk
- External supply chain risks such as Environmental risks.

It also suffers from various vulnerabilities:

- External vulnerabilities: turbulence, financial, regulatory or legal
- Internal vulnerabilities: Resource limits, supplier, customer, infrastructure or deliberate threats
- Structural vulnerabilities: supply chain complexity, supply chain structure and design characteristics

This requires proper risk management and cannot be dealt with the traditional risk assessment strategies.

Cloud Computing

The term 'Cloud Computing' was first coined in 2007. Cloud computing may be defined as *"a connectivity-facilitated virtualized resource (e.g. software, infrastructure, or platforms) that is dynamically reconfigurable to support various degrees of organizational need, which allows for optimized systems utilization"*.^{iv}

A working definition has been published by the US NIST which captures the major aspects of cloud computing as mentioned below.^v

- Five characteristics: pooling of resources, access over a broad network, rapid elasticity, on demand service
- Four deployment models: private, public, community and hybrid clouds
- Three service models:
 - Software as a Service: Software and business applications (such as ERP, CRM) are deployed and delivered to firms as a service. These are on-demand

services. Firms can access it from anywhere in the world. Ex – Salesforce.com, Google Mail

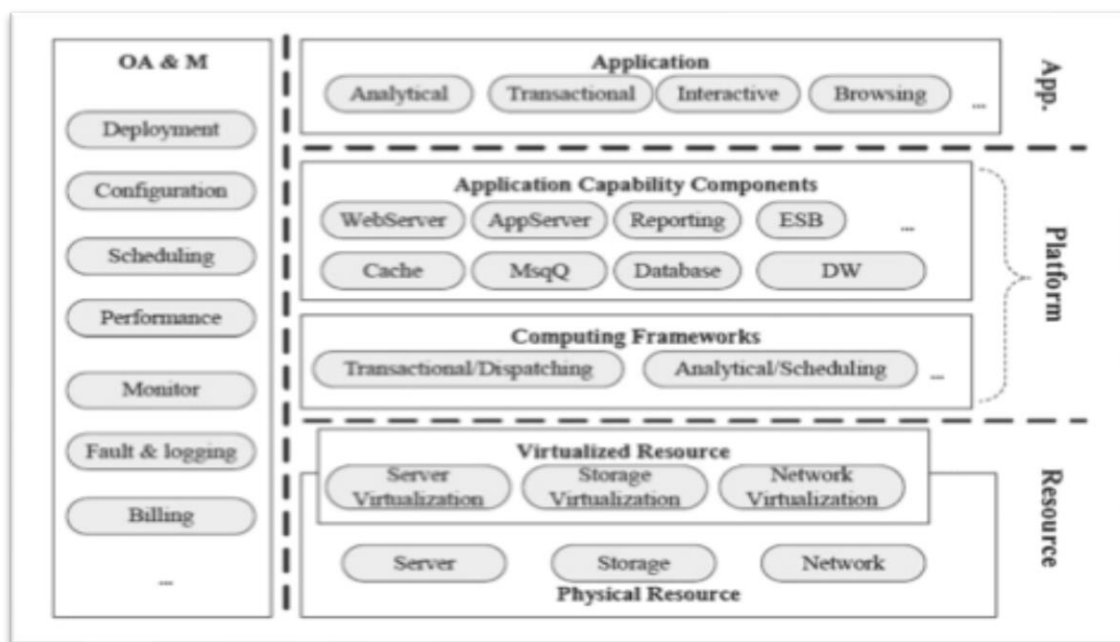
- Platform as a Service: These solutions provide a platform where people can create their own services or applications. These applications will again run on Cloud. Ex – Google App Engine
- Infrastructure as a Service: In this, infrastructure (virtual/physical resources) are delivered to customers. This meets end-user requirements of memory, storage, operating system, computing power etc. Ex – Amazon Web Services, Microsoft Azure

Cloud Architecture^{vi}

Many organizations have tried to define the underlying architecture in Cloud. We can divide the architecture into two parts - Core stack and Management. The core stack can further be divided into three layers:

- Resource layer which is composed of the infrastructure (storage and networking) resources and physical/virtualized computing.
- Platform layer which has sub-layers such as the computing framework or storage sub-layer. It performs various functions including transaction dispatching, unlimited storage and caching mechanism or task scheduling.
- Application server which provides on-demand service capability that can also be flexible according to requirements.

Open interfaces or other web services are used by these layers to provide external services. The diagram below depicts the cloud architecture.



Advantages of Cloud Technology

The benefits provided by Cloud-based solutions and services are:

- **On-demand services:** Resources and services are provided on-demand. It also allows users to customize/personalize their computing environments through administrative privileges
- **QoS guaranteed offer:** Cloud provides QoS (hardware performance like I/O bandwidth, CPU processing speed, memory etc) by creating Service Level Agreements with customers.
- **Autonomous Systems:** Can be managed transparently by customers. Hardware, software or data present inside the cloud can be integrated to provide a single platform image for customers.
- **Scalability & Flexibility:** The services can be easily scaled across various aspects (geographical locations, no. of users, hardware requirements). They are flexible enough to adapt according to the changing requirements. This essentially becomes very useful for start-ups where requirements continuously change.
- **Rapid deployment:** A complete solution can be deployed to the customer in a fraction of the time as compared to complete on-premise solutions. Greatly reduces turnaround time.
- **Cost benefits:** If the total cost of ownership for an on-premise solution is \$100, the same for a cloud-based solution will be around \$20-\$30. This helps companies increase their operating profit.
- **Improved Manageability:** This does not require the resources/efforts generally involved in maintaining an on-premise solution. Hardware requirements are minimum except high speed internet connection.

Supply Chain Management on Cloud

After recession, many companies started to outsource their manufacturing. This led to the development of complex supply chains. With company headquarters in USA and manufacturing factories in China, supply chain began to flow through custom brokers and freight forwarders. This led to the necessity of a proper information collaboration process.

Disruptions in a supply chain can be categorized as:

- Internal disruptions such as uncertainty in lead times, supply cost, supply yields, supply capacity etc.
- External disruptions such as natural or man-made disasters.

A cloud based supply chain system can help decrease inconsistency in information, reduce degrees of uncertainty, eliminate problems in collaboration and help integrate interactive processes. For example, transportation management has seen an evolution from standard reporting to business analytics that enables faster and more efficient decision making. Also, if changes are made to any purchase order, the changes will be done for every partner in the supply chain.^{vii}

The table below provides a summary of the cloud-based supply chain management applications.

Supply Chain Activity	How it works in Cloud Based SCM systems
Forecasting & Planning	<ul style="list-style-type: none"> - Obtain sales data from the Internet - Perform data analysis - Give accurate demand forecast <p>All of this is done on a single platform</p>
Sourcing & Procurement	<ul style="list-style-type: none"> - Functions as a database Contains data about all the suppliers/vendors which makes it easier to switch between suppliers - Contract design and development - Usage of scenario based decision making during sourcing
Logistics	<ul style="list-style-type: none"> - Allows tracking of in-transit inventory - Virtual warehouse for products in pipeline stage - Dynamic re-routing depending upon product location - Exception alerts based on certain pre-defined performance indicators. This helps provide early warning about delays and disasters.

Benefits of Cloud-based SCM

- Support of community collaboration: Cloud-based system instantly connects the large number of suppliers and partners. This improves visibility across organizational boundaries.
- Today fluctuations in forecasts practically happen overnight. Cloud technology can help execute accurate and real-time statistical demand forecast for all partners who are a part of the supply chain. This can greatly decrease the impact of bullwhip effect (increasing inefficiency in demand forecast as we move up the supply chain).
- Wrong inventory levels can adversely impact the integrity of the system. This could happen when the count at a particular location excludes items which are in-transit. Latency could be a reason for it. Cloud based systems can help prevent this by providing real-time data about such items.
- A cloud-based system can help people see risks real-time and rapidly develop a plan to mitigate the risk. For ex – when a disaster hits, in case of an on-premise ERP system it becomes difficult to understand the current inventory status, production levels or replacement transportation options. This is not a problem in case of ERP systems.

- There is a negative correlation between business process complexity and intention to shift to cloud. Firms with complex business processes have a lot of interdependencies in their tasks which are done in-house, the information required from the suppliers and the software used. Hence, it becomes important for them to keep all of this information within the company to maintain the competitive advantage. This may deter them from adopting 3rd party cloud software technology even if the cloud solution provides better information processing capabilities.
- The application functionality of a firm's existing systems can also affect the decision to adopt cloud. Higher functionality leads to an increase in the intention to adopt 3rd party cloud software technology because then the transition becomes easier. Or, it could also be that cloud would act as an add-on to the current application.
- There is a negative correlation between current systems compatibility and intent to adopt 3rd party cloud software technology.

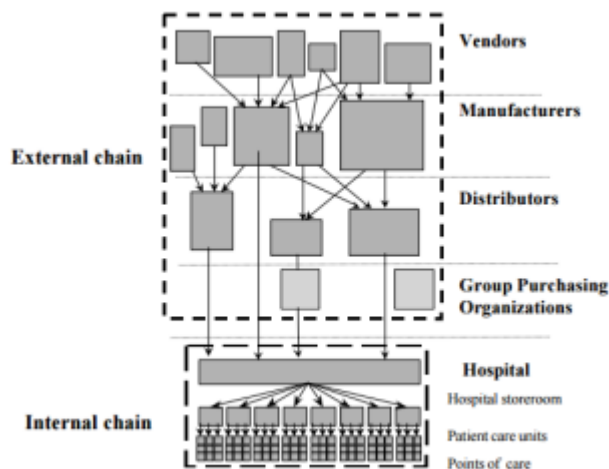
However, in certain scenarios, the advantages offered by the cloud service provider get outweighed by the perceived risks.

Supply Chain Management – Industry Perspective

Here, we have tried to understand the supply chain management systems used in different industries.

Healthcare

The healthcare industry faces the challenge of proper capacity planning and inventory management. There is huge problem in terms of demand mismatch of drugs, healthcare devices and instruments due to increased lead times of all these materials. There are also situations of unexpected demands during emergency cases. The following diagram shows the health care supply chain.^{ix}



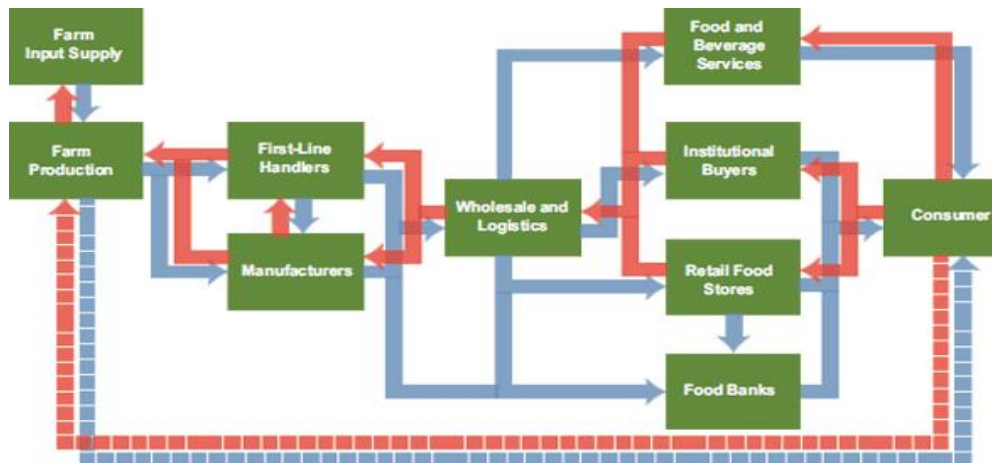
To handle such scenarios, the focus is on having safety stocks at pharmacies, hospitals and other medical centres. This is to minimize the serious consequences that may happen due to shortages of any of these.

The shortage of drugs and other instruments leads to increase cost of sourcing those from other outlets during emergency situations such that the safety of patients is ensured.

A proper IT solution would ensure that all such situations are avoided by efficiently sharing information with the vendors so that materials can be acquired on time.

Beverages

As like other industries, demand and supply chain mismatch issues are common here due to seasonal bias. This leads to capacity constraints during the off-seasons. Forecasting the right demand cannot always be true due to unexpected weather conditions. The diagram below shows the beverages supply chain:^x



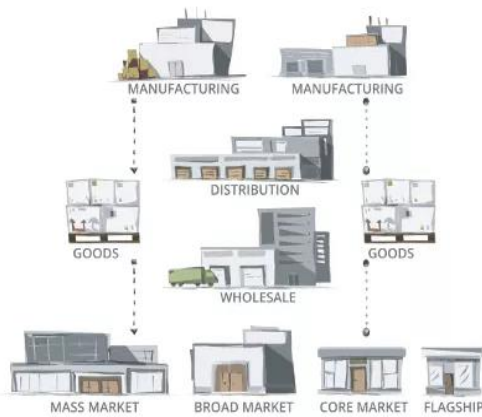
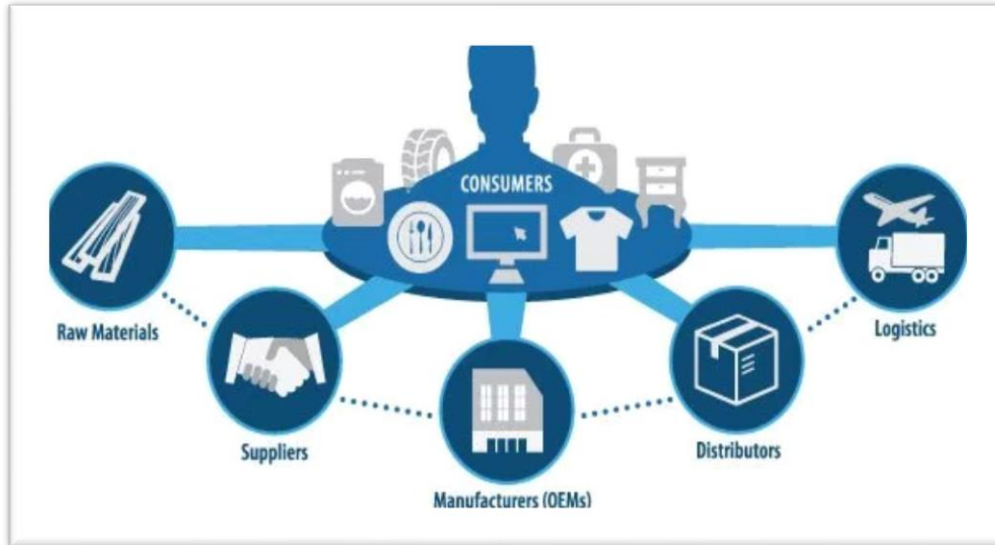
The quality of products which has limited shelf life requirements is another challenge in maintain the right set of inventories. There is also a risk of changing preference levels amongst customers.^{xi}

Forecasting information is required at all the stages so that inventory can be planned well in advance during peak seasons. Distributors/dealers/retailers would not prefer out-of-stock as this directly affects their profit margins. Apart from these, transportation to remote locations creates logistics issues. Hence, a tightly integrated supply chain software could create a balance and provide efficient mechanism to handle customer demand.

There could be a scenario where the weather forecast would predict a perfect weather and it can turn out rainy. The entire inventory can get destroyed leading to huge losses. Hence, the demand is completely unpredictable.

Manufacturing

Manufacturing industry focuses heavily on the labour work force. Given the kind of demand fluctuations that exist in market, companies might end up with huge losses if they do not get to predict the market situations.



A lot of money can be saved if the right amount of work force is put to work. It reduces immense dependency as well. The diagram on the left shows the manufacturing supply chain.^{xii}

Also, raw materials being sourced from different vendors have to be managed so that the right amount of finished goods can be prepared as per market requirement.

SCM module here could help the companies to better manage all the stakeholders right from procurement to delivery at a competitive cost. This could also involve delivery of customized products.

Retail

Supply chain in a retail industry focusses on the processes involved right from manufacturing to delivering the product to an end user. Each step in the supply chain namely – warehousing, transportation & distribution to retailers play an important role as they directly affect the cycle time. The complete integration of all the steps can be better handled by SCM module which greatly reduces the time for efficiently co-ordinating an end to end automated process.^{xiii}

The basic Supply Chain dimensions that are highly used in this industry are: Capacity & capabilities, delivery channels, customer risks, product safety, demand & supply match, returns & repairs, etc.

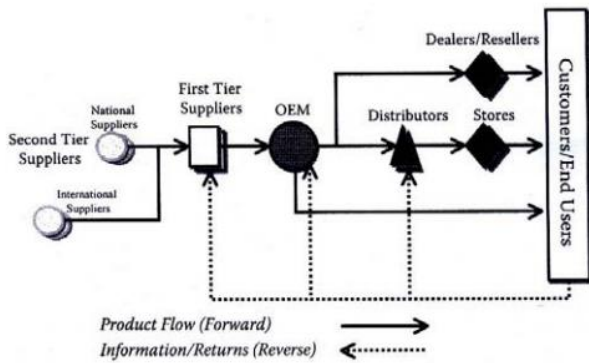


Fig: Shows the different stages in the retail Supply Chain

The diagram on the left shows the retail supply chain.^{xiv}

The nature of demand is not constant and hence there is increased dependency on the Supply chain to get finished good on time at the retail outlets.

Forecasting the right demand and delivering it on time could be the basic necessity of a software that this industry would focus on so that the customer gets the right product at the promised time.

The end goal of a good supply chain software would be to help the organization achieve its targets through effective and efficient demand, supply and resources management.

Automotive

The automotive industry is one of the fastest growing industry and has a huge customer base. The most important challenge is the Just in Time (JIT) delivery model being used by multiple automobile manufacturers. This creates the issue of On-time delivery and increases cost burden on the supplier.

The diagram below shows the supply chain in an Automotive industry.^{xv}



Hence the goal of all the companies lies around inventory management such that the dealers have the right set of inventories which reduces pressure of over-stocking. This is owing to the volatility of demand in this industry and the change in government regulations which leads to multiple scenarios of recalls. Some of the other challenges are: scarcity of labour, complex supply mechanism, lack of information transparency.^{xvi}

Agriculture

The major players in this industry are: Raw material suppliers, farmers, intermediary agents, distributors and dealers.



This industry involves delivering products to a collection centre. Farmers need to deliver the commodities on time so that they are fresh. Long queue at the collection centre can lead to time wastage. At the same time, the vehicles would be blocked. At the same time, there is an increased volatility in demand. There may be peak seasons where demand may be high and would require extra labour. ^{xvii}

Some of the other challenges are related to lack of proper infrastructure to store the commodities, limited reach of the collection centres for the farmers, lower than expected price signals, etc.

The table below does a comparative analysis of the importance of different stages of supply chain across the industries.

Industry	Inventory Mgmt.	Supplier Mgmt.	Warehouse Mgmt.	Demand Planning	Order Mgmt.	Transportation Mgmt.
HealthCare	High	Medium	Medium	High	Medium	Low
Beverages	High	Medium	Medium	High	High	High
Manufacturing	High	High	High	High	High	Medium
Retail	High	Medium	Medium	High	Medium	High
Automotive	High	Medium	Medium	High	Medium	Medium
Agriculture	High	Low	Medium	High	Medium	Medium

Customer Interviews

We conducted interviews with various customers/stakeholders. The major points of these interviews are:

Reasons for not migrating to cloud

- **Satisfaction with current on-premise systems** – Many companies are well satisfied with their current on-premise supply chain management systems. Hence, they find no reason to justify the huge cost involved in migrating to cloud.
- **Network issues leading to destabilization** – Using a cloud-based system requires proper network connectivity. This discourages many companies who are worried that issues in network connectivity can destabilize day-to-day operations.
- **On-premise infrastructure** - For some companies, the bigger dilemma is finding an alternative usage of the infrastructure they have already invested in if they migrate to a cloud-based system. They need to justify the ROI on that infrastructure.
- **Cloud-ready applications** – Various applications used by companies are legacy applications that are generally not cloud ready. Or belong to an older version which may not be supported by the OS/databases.
- **Size of the applications** – The size and scope of the enterprise system becomes another issue when considering cloud-based systems in place of on-premise systems. It becomes difficult for some companies to envision how an Oracle or SAP solution can be converted into a cloud-based offering
- **More contact points** – When it comes to supply chain systems, they are used by multiple people (such as manufacturer, carrying & forwarding agents, distributors, wholesalers etc). Due to multiple contact points, network connectivity again becomes an important issue. Especially when factories are located in remote locations which do not have proper connectivity.
- **Zero downtime** – Companies cannot afford to stop their operations at any point of time. This requires that migration should be done with zero downtime which is something people are generally sceptical about.
- **Security & Privacy** – A major concern for companies is whether the data is maintained securely on cloud. There is always a threat of data getting leaked to outsiders. Companies running their own data centers are also using the concept of cloud, but at the same time they have control over the security of the data. But here, the data is now on the Web.
- **Loss of control over data** – Another concern is that data may become unavailable or may get lost at some point in time if there are service outages at the cloud service provider's location.

- **Efficiency of the IT department** – Cloud-based services may be introduced by business groups, but ultimately, they have to be managed by the IT department. This includes managing Service Level Agreements with the cloud service providers and monitoring the output. Hence, a lot depends upon the efficiency of the IT department to manage these functions.
- **Lock-in with vendor** - It may become difficult to switch vendors in the future if no common standard is followed leading to a lock-in with the current vendor.
- **Generic solution** – Customization could be a challenge in common enterprise software's. The company ERP systems are heavily customized and hand-integrated.

Pricing Models

Companies generally prefer the following pricing models:

- User based pricing model for Software as a Service
- Usage based pricing model for Infrastructure as a Service

Modules not shifted on cloud

During cloud migration, companies do not prefer shifting certain modules of their applications to cloud such as:

- Modules involving financial data
- Modules involving confidential data (for ex – ingredients used in a product)
- Modules involving huge data transfer. Such a module may end up using too much network bandwidth.

Recommendations

Following are the recommendations for a cloud based SCM vendor:

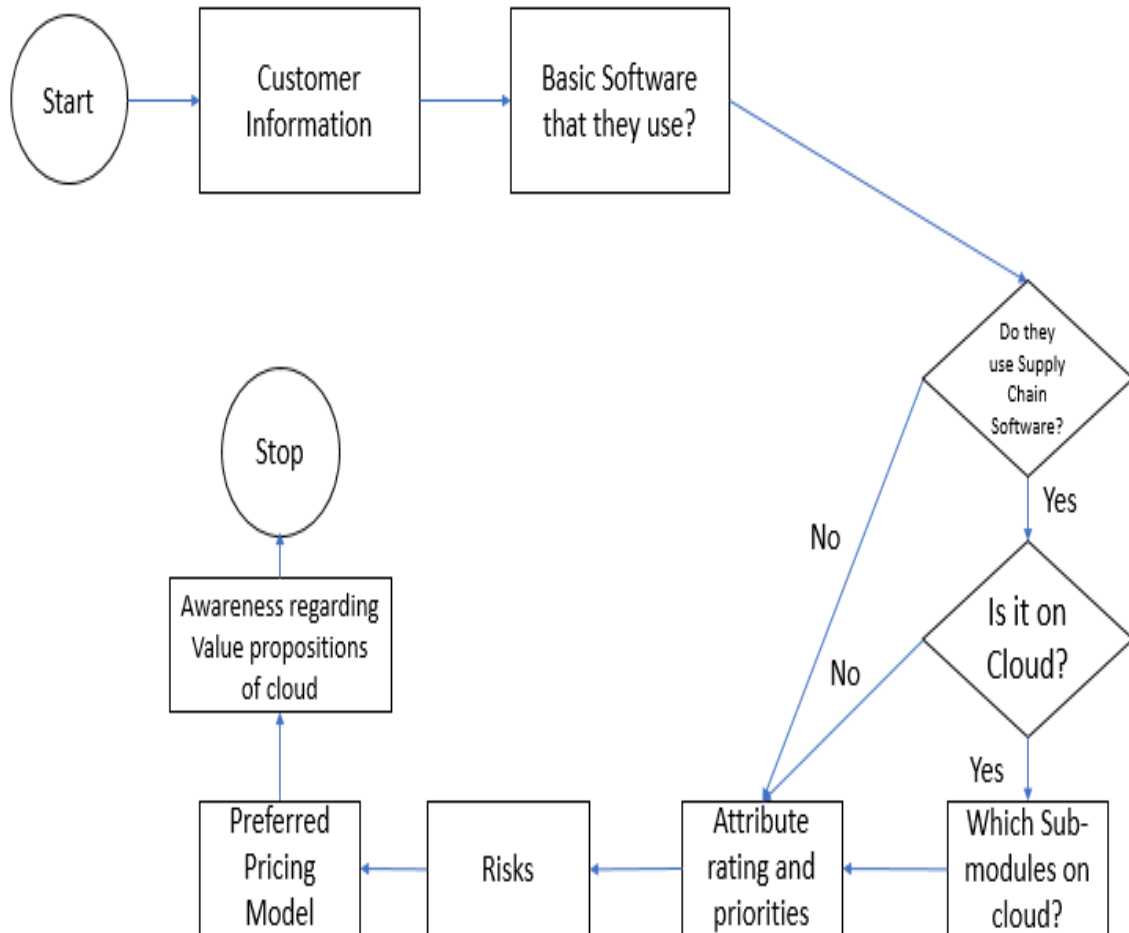
- **Focus on customers who already have a working module on cloud** – Customers who already have On-cloud version of software would be better prospect for SCM on cloud. They would know the pros and cons of this technology and can be converted with minimum effort.
- **Establish contracts with third party vendors to get exchange deals for existing legacy hardware** – Most of the customers are found to be happy with the existing legacy system. One reason to this is the fact that they believe the current On-premise setup cost would be a huge loss. So, the recommendation is that SCM vendors should have a contract with the hardware vendors for exchanging the legacy systems of such clients.

- **Partner with internet providers to resolve issues related to Network in remote areas**
 - The generic issues observed across industries is the presence of their plants in remote areas where network connectivity was a major concern. Hence, the recommendation is to work closely with major network service providers to resolve such network related issues so that clients can conveniently use the software and feel confident in migrating to cloud.
- **Give zero downtime assurance to clients during migration to cloud** – Most of the clients feel that the migration time required to switch to cloud would affect their on-going business. This is a threat as they are in no way interested in the downtime of their Live/production systems. So, a well formulated strategy for migration to cloud (e.g. migrating in parts during non-working hours) would convince the customers that their journey of cloud would not affect the existing version of software.
- **Focus on start-ups** – There is a huge market in this space where a lot of small companies are working in agriculture, healthcare, and various other industries which require a supply chain software. These small companies are in no way ready to spend in an On-premise software. Cloud is their ideal technology and hence are the best prospects. The challenge here is the competition from other service providers. Hence, creating differentiation in terms of price, value propositions, after sales service and the brand value will play a major role.
- **Promise to fix any kind of issues within 24 hours** – The biggest challenge with an On-premise software is the time taken to resolve any bug/issue. And the bigger challenge is the implementation of the solution along with its testing which may create regression issues. These can easily be reduced drastically in a Cloud software. Hence, the SCM vendors should create mechanisms by which uninterrupted service can be provided. Issues or bugs can be resolved within a short time and upgradation can be an easy procedure.
- **Conduct workshops to train the IT team about the advantages of Cloud** – Lack of sufficient knowledge on cloud stops the IT teams from taking a decision regarding their migration. Hence, it is recommended that workshops be set up where IT heads from multiple companies can participate in a joint meeting. The workshop would also include a talk by the leaders of some big companies who are already on cloud. This would create a better impact on the prospects.
- **Provide a local backup of all the data to mitigate risks related to data loss** – Some clients have the belief that data might get lost when it is on cloud. Hence, it is recommended that a local copy of data should be created in customer's environment. The mechanism should be such that the data can be easily re-used in case of failure or issues with cloud data.

- **Easy integration with software from other vendors** – There should be standard and easy mechanism to integrate the SCM module on cloud with any other module from the same vendor or from a different vendor.
- **Customization option to partially move some parts of Supply Chain on cloud** – Some clients might not be interested in moving its entire supply chain on cloud. There should be customization option available at each stage of the SCM module where customers can decide about what portions to switch to cloud.
- **Smooth Data migration process during switching to other platforms** – The mechanism for migrating data to another vendor should be efficient and simple.
- **Hybrid Solution for process/data sensitive customers** – This is especially targeted for those customers who either do not want to move their entire supply chain on cloud or do not want their entire data to be on cloud. A hybrid SCM solution would benefit such customers where they can have a part of their system on cloud and the remaining on their internal servers.

Appendix 1 – Survey

For this project, we have prepared a survey. The objective is to get the views of people in the supply chain industry on the adoption of a 3rd party cloud based software for the supply chain process.



[Link for the Questionnaire Survey:](https://iimb.au1.qualtrics.com/jfe5/preview/SV_8umAek5SZ7q142h?Q_CHL=previe)

https://iimb.au1.qualtrics.com/jfe5/preview/SV_8umAek5SZ7q142h?Q_CHL=previe
w

The questions used in the survey are:

What is the name of your Company?

Which Industry do you operate in?

Information Technology
Automobile
Chemical
Construction & Capital Goods
Consumer Products
Energy
Finance
Health Care
Infrastructure
Metal
Retail
Media
Telecom
Textile
Others

How many employees work in your Organization?

< 1000
>= 1000 & <5000
>=5000 & < 20000
>= 20000 & < 50000
>=50000

Where is the Company Headquarter?

India
The United States
Europe
Others

How old is your company?

< 1 year
>= 1 year & < 5 years
>= 5 years & < 10 years
>= 10 years

What is the revenue of your company?

< \$1B

>=\$1B & <\$5B

>=\$5B

Which of the following software modules do you use in your Organization?

	Click to write Column 1	
	Yes	No
Human Capital Management	<input type="radio"/>	<input type="radio"/>
Supply Chain Management	<input type="radio"/>	<input type="radio"/>
Supplier Relationship Management	<input type="radio"/>	<input type="radio"/>
Customer Relationship Management	<input type="radio"/>	<input type="radio"/>
Finance	<input type="radio"/>	<input type="radio"/>



Is the Human Capital Management software module on Cloud?

Yes

No

Is the Supply Chain Management software module on Cloud?

Yes

No

Is the Supplier Relationship Management software module on Cloud?

Yes

No

Is the Customer Relationship Management software module on Cloud?

Yes

No

Is the Finance software module on Cloud?

Yes

No

Which Supply Chain Management Sub-Modules do you use on cloud?

Procurement

Material Management

Logistics

Comments

What features would you look for in a Cloud Software from a 3rd party vendor?

	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Cost Savings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ease of use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High quality service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immediate problem resolution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommendation from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scalability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dynamic reconfiguration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which of these factors could become an important reason for not shifting to cloud?

	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Risk of information leak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Little knowledge about cloud technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proprietary information which cannot go outside company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Previous unpleasant experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data lock-in with a vendor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low confidence in performance and reliability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compatibility issues with current technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee training costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Existing systems already perform required tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which pricing method would you prefer for a Cloud software?

- User based pricing
- Usage based pricing



Which of the following parts in logistics management software would you be willing to shift to cloud?

- Barcoding / RFID
- Container Tracking
- Customer Relationship Management
- Cross Docking
- Inventory Management
- Job Management
- Labor Management
- Order Management
- Scheduling
- Purchasing
- Shipping Management
- Third-party logistics
- Others

Are you aware that that issues can be resolved much faster in a 3rd party cloud based solution ?

Yes

No

Would you be willing to pay a premium for immediate problem resolution on Cloud software?

Yes

No

Comments

>>

References

ⁱ <http://www.emeraldinsight.com/doi/pdfplus/10.1108/09574099710805556>

ⁱⁱ Shacklett, M. (2010). SUPPLY CHAIN SOFTWARE: The big spend. *World Trade*, WT 100, 23(10), 16-18,20,22

ⁱⁱⁱ Nowicki, D. R. (2015). The impact of cloud based supply chain management on supply chain resilience

^{iv} Vaquero, Rodero-Merino, Caceres, & Lindner, 2008

^v . P. Mell, T. Grance, The NIST Definition of Cloud Computing (National Institute of Standards and Technology, Information technology laboratory, 2009)

^{vi} Ahmed Shawish, Maria Salama, Cloud Computing: Paradigms and Technologies

^{vii} Biederman, D. (2012, Jan 09). Supply chains head to the cloud. *Journal of Commerce*

^{viii} Wu, Y., Cegielski, C. G., Hazen, B. T. and Hall, D. J. (2013), Cloud Computing in Support of Supply Chain Information System Infrastructure: Understanding When to go to the Cloud. *J Supply Chain Manag*, 49: 25–41. doi:10.1111/j.1745-493x.2012.03287.x

^{ix} Nowicki, D. R. (2015). The impact of cloud based supply chain management on supply chain resilience

^x <https://www.nap.edu/openbook/18846/xhtml/images/img-47.jpg>

^{xi} <https://www.llamasoft.com/industry/food-and-beverage/>

^{xii} <http://cerasis.com/2015/07/24/supply-chain-management-in-manufacturing/>

^{xiii} <https://www.slideshare.net/RahulJha6/retail-supply-chain-management>

^{xiv} http://164.100.133.129:81/eCONTENT/Uploads/Retail_Supply_Chain_Management.pdf

^{xv} <https://www2.deloitte.com/us/en/pages/audit/solutions/automotive-supply-chain-risk-management.html>

^{xvi} https://www.slideshare.net/acoxdatex/supply-chain-logistics-basics-the-automotive-supply-chain?qid=240daacb-c112-4af3-b2ca-0b6a9186a5e8&v=&b=&from_search=7

^{xvii} <http://blog.ekaplus.com/blog/top-3-challenges-in-the-agriculture-supply-chain>