DIGITAL SUPPLY CHAIN: BENEFITS, CHALLENGES AND FUTURE DIRECTIONS

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Abstract: *Suppliers, partners, companies, dealers and end users in supply chain needs to share information related to goods processing, which is enabled with the help of digital technologies. By building centralized digital supply chain platform, real-time access of data and information is possible between stakeholders and companies. This digital transformation of supply chain will increase gross sales or revenue of the companies by minimizing lead time and accelerating supply chain velocity. In this article, we shall discuss about innovative technologies used in supply chain operations such as Internet of Things, Unmanned aerial vehicles, Cloud Computing, Big data, Block-chain technology etc and its applications in supply chain management. Finally, it highlights the benefits and challenges of digital supply chain, along with the road map for future supply chain research.*

Key Words: *Digital supply chain, Digital transformation, Innovative technologies.*

1. INTRODUCTION:

Digital supply chain is a set of process, uses digital technologies to manage stakeholders functions effectively i.e. Sourcing suppliers, procurement of raw materials and its parts, estimating demand, making final product, arranging logistics and sales channel and finally enriching visibility of orders to reach the end users. With this visibility of the organizations supply chain through digital technology, it is easy to measure the performance of suppliers, optimize inventory management, predict demand of the product in the market, improves speed and agility of manufacturing process and finally tracking the orders of end users where they arrive. Some of the digital technologies involved in supply chain management are Artificial Intelligence, Cloud Technology, Internet of Things, Robot process Automation and Augmented Reality. By adapting this digital transformation strategy, companies can improve quality, reduce costs, improves customer experience and operational efficiencies which required in dynamic business environment. To accelerate the growth of manufacturing industries, implementation of digital supply chain software can be enabled to track and manage the flow goods across a business. Mostly it helps in tracking inventory levels of goods; it reduces waste and errors in manufacturing process, its helps the companies to comply with regulations such as ISO 9000 or 9001 and finally it promotes the productivity of the business.
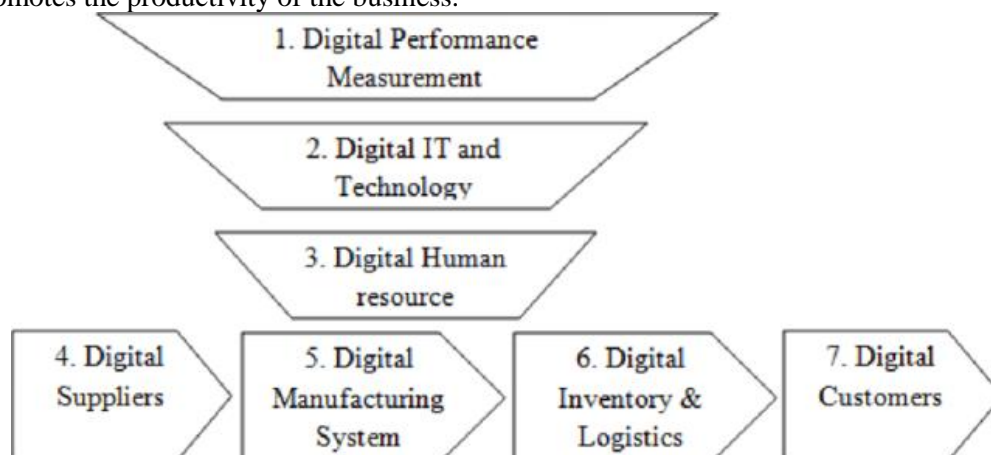

Diagram 1: Seven Dimensions of Digital Supply Chain Management

On broader scale digital supply chain will allow the business to align with the new product to preferred supply chain strategies and mitigate risks in early product life cycle and properly identify the end stage life cycle to ensure a

more stable and reliable supply pipeline. Moreover it makes business to withstand in the competitive environment and also digital supply chain quickly responds to the changing customers demands.

2. LITERATURE REVIEW:

The advent of globalization and e-commerce, promote the growth of supply chain with huge opportunities and some challenges like visibility and complexity in exhibiting supply chain."The extensive use of internet by customers in retail industry makes them impatient in business –to- business (B2C) and business to customer segments (B2C). In future companies has to estimate the influence of e-commerce on wholesale, distribution and retail, as well as the mixing of offline and online purchases and the increasing growth of alternatives to home deliveries. The consumer mere in the future don't want to wait- they want to order and receive the order as soon as possible and the companies has to tackle this challenge effectively". (Farahani P et al.2015a). At present, the consumer buying behavior and demand pattern are significantly affected by consumer's internet penetration rate along with comparisons in terms of product features and pricing (Accenture, 2015). Due to consumer's high internet penetration rate has significantly change the consumer buying behavior and demand pattern which in turn relies heavy pressure on supply chain managers in designing supply chain. According to Farahani et al. 2015a, b following challenges and trends are identified for the next couple of years these are: visibility to supply chain, Globalization, supply chain collaboration, responding to the volatile markets, Process automation and standardization and creating new business models. So supply chain mangers have to develop some suitable strategies related to digital supply chain, to face the competition in this dynamic business environment. Emerging technologies such as Internet of Things, Artificial Intelligence, Machine learning, Robot process Automation are having notable impact on present and future supply chain management model. It is expected that emerging technologies may provide solution to some of the challenges in supply chain management, leading to cost reduction, reduce complexity, can create new business model, and increase in productivity.

3. BENEFITS AND APPLICATIONS OF DIGITAL SUPPLY CHAIN:

By digitalizing supply chain, company can optimize production lead time; thereby it can have better control over raw material and production capacity which will increase the efficiency of production process.DSC provides real time updates to logistics professional, related to planning and rerouting of delivery process to customers. Digitalization effectively reduces the supply chain waste and less need for maintaining freight work, by frequent tracking of expiry dates and thereby by improving inventory and material management. A digitalization in shop floor monitors real time production performance which helps in tracking unexpected downtime and allow us to compare expected costs versus actual costs without any manually compile information. For effective planning, logistics professionals can use predictive analytics to create more accurate forecasting models for supply chain management functions, in constantly changing real-world events. Block chain plays important role in digital supply chain management, which helps the companies to do transactions directly, without any third party involved. It also initiates integration of financial and logistics services, which enables greater data collaboration between stakeholders. The Internet of Things has a vast range of IOT applications in digital supply chain management, by using automated sensors, it is easy to track and monitor of goods both in production and delivery process which improves transparency and planning of supply chain management process efficiently. Cloud computing on supply chain management creates a User-based model that provides a network, storage and capacity to be updated or adapted faster. Mainly it can be used to connect and add with new partners and suppliers, scale down or scale up or adapt to new market conditions. Big supply chain analytics uses data and quantitative methods such us statistical methods which will improve supply chain decision making, all the way from the improvement of front-line operations, to strategic choices, such us selecting right supply chain operating models. These are the applications related to digital supply chain management.

4. OBJECTIVES OF THE STUDY:
- To study about applications and benefits of digital supply chain management.
- To highlight the challenges associated with digital supply chain management and provide proper suggestions for improvement.
- To provide road map for further research in digital supply chain management.

5. RESEARCH METHODOLOGY:

The research methodologies speak about the way in which research is going to be conducted. This includes how you plan to collect data, use of statistical analysis, observations, etc. The purpose of research methodologies is to back up or support your collection method and key points of your research.

SECONDARY DATA

Secondary data is data collected from previous research instead of collecting the data yourself. Secondary data is basically a primary data stored by someone and is used by others for their own purposes. For this proposed paper analysis is done by means of data collected through different websites and journals.

6. CHALLENGES FOR THE DIGITALIZATION OF SUPPLY CHAINS

- Main internal challenges of retail businesses related to digitalization is inflexibility or resistance to use of the technologies and other hurdles of implementation of digitalization come from skill gaps, unclear goals, unstandardized processes and disparate systems.
- The cost and time of integrating supply chain management platform with informational technology is often more. It is difficult to select right kind of vendors, tools and solutions with relevant value and integrate the system with existing systems and processes. In case of multi-tiered supply chains across the globe involve multiple stake holders using different systems, legal solutions and paper-based documentation, which creates more barriers in implementation..
- The main challenges of global retailers is difficult in managing risks related to cyber security and data breaches since there is great number of transactions every day. The weakest supply chain links are targeted by attackers, which will have greatest negative impact on business performance and customer experience for the retailers.
- The recent popularity of omni-channel shopping experience among customers has led to sudden expansion of data to businesses. Even then, retailers are unable to extract any actionable insights from this data to provide a superior personalized shopping experience. Due to complexity in gathering, organizing and analyzing data hinders businesses in managing information well and leads to misleading analysis, impacting customer experience.

7. SUGGESTIONS:

- To trouble shoot internal challenges of retail business, retailer should select intuitive technological systems for quick adoption and productive use by teams. The right platform facilitates better collaboration among team members by ensuring visibility and real time access of data for all. Retailers should give proper training for employees, for successful implementation of digital platform.
- The risks related to cyber security and data breaches can be managed by adopting cloud-based technology, which offers high security for sensitive data through features like firewalls, threat intelligence and data masking. Retailers can also adopt the asset –light strategy for supply chain management to reap the cost benefits from outsourcing capabilities to external agencies.
- As retailer proceeds to build effective Omni channel markets, to enhance customer experience, enterprise-level strategy should be implemented. By aligning business objectives, proper supply chain network structure, appropriate technology and data needs, retailer should build effective digital platform for Omni channel markets. Altogether, it will improve transparency and retailer can meet dynamic customer expectations. Thereby it reduces complexity in data gathering, organizing and analyzing for business purpose.
- By using advanced technology like data analytics and artificial intelligence which will help the stakeholders with intelligent decision making and create agile supply chain. It will help the retailers to source products, new suppliers, upcoming product categories, faster trade routes to avoid shipment delays, manage inventory, track shipments and much more.

8. FUTURE RESEARCH DIRECTIONS :

This concluding section will point out some of the directions for further studies. In future concept of met averse can be implemented for supply chain management to meet dynamic customer demands. Met averse is a fusing of the digital and physical worlds powered by technologies, including virtual reality (VR) and augmented reality (AR), block chain, artificial intelligence (AI), and the internet of things (IoT) that connects smart devices. It is considered as next evolution of internet. Meta verse will improve the transparency of supply chain management by enabling 3D representations of how businesses create, deliver and advertise their goods. The concept of Meta verse helps to view entire supply chain network – from suppliers to end customers – to continually balance supply and demand in real time. By implementing this technology companies can able to reduce costs, drive greater resilience and sustainability and to meet changing customers demand.

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