

# HOW ANALYTICS CAN IMPROVE LOGISTICS AND SUPPLY CHAIN IN MULTINATIONAL COMPANIES: PERSPECTIVES FROM EUROPE AND AMERICA

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## Abstract

The research is focused on the role of big data analytics in logistics of transportation in multinational companies across the world. It shows new opportunities for current supply chain practices, while adding operational excellence and value. A survey was carried out among staff members of multinational companies from the Americas, and Europe. For the statistical investigation of survey data, an equation modeling was used. Results reveal that demand management, seller rating, and vendor satisfaction are the most important factors. The study also found that analytics affect efficiency, operational excellence, customer service, and cost savings in the supply chain industry. The goal is to reduce the gap between demand management and supply chain management by improving customer satisfaction, visibility, and visibility. The big data can produce substantial value-added and monetary gains for companies and will quickly become common throughout the industry.

**Keywords:** decision-making, public transportation, big data analytics

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## 1. INTRODUCTION

Analytics is the procedure of acquiring actionable insights via problem analysis, and the application of statistical analysis and models against current and simulated data. It involves translating huge volumes of complex data and information into precise, meaningful, and clear info through innovative statistical analysis to allow users to generate correct and fact-based choices (Babar & Arif, 2019). Information analysis is revolutionizing the business spectrum, enabling improved organizational performance and business processes, giving companies a competitive advantage. Current technical advancements in the collection

and storage of information allow company to take advantage of recent technological advancements in their favour. Analysis of resources, for unstructured data, has overwhelmingly converted the dynamics of resources and the company atmosphere.

Analytics is required in the current business environment to know trends and to draw significant inferences from big data, intending to enhance company efficiency. The supply chain business gains enormous quantities of information from various sources including radio frequency identification, tracking devices, sensory information, etc. Exploiting this information with the help of info technology, i.e., business intelligence insights, analytics etc., may help improve pre-existing supply chain methods, reduce costs, and have better inventory management, in turn, resulting in increasing earnings in the supply chain business. Moreover, as discussed, big data analytics are generally of extensive usage throughout the supply chain, including procurement, production, marketing, and distribution. Additionally, dynamic decisions across the supply chain usually require sophisticated information sharing processes.

The word 'big data' explains the large amount of unstructured and structured information that is growing exponentially, and it is analysed using analytics and information warehousing. Balbin et al (2020) identified the word as a '4V' framework, which includes higher volume, high veracity, high velocity, and substantial variety info (Balbin, et al., 2020). It uses different processing steps to ensure better decision-making, with analytics to enhance procedures and ensure company optimization. The use and adoption of innovative IT and electronic tools is a crucial aid for supply chain optimization. This transformation has also transformed the definition of competition in the marketplace.

An evaluation of the literature shows that lots of scientific studies have been performed on the effect of data analysis and the use of different data processing techniques, with the goal of extracting meaningful info coming from the information produced by the supply chain sector to increase earnings, improve functional efficiency and gain competitive advantage. Thus, big data is used to develop forecasting strategies, facilitate logistics, create better pricing mechanisms, ensure client satisfaction, maintain seller control, and facilitate risk assessment. The primary emphasis of this paper is exploring less researched elements, such as demand management, vendor rating, analytics, information science in relation to SCM, together with the factors previously answered in literature, to create a model that concentrates on the effect of big data in the supply chain business. The research answers a few questions:

- Q1. Can analytics really affect logistics and supply chain in multinational corporations (MNC)?
- Q2. To what extent can analytics improve the logistics in MNC?
- Q3. What factors contribute to the impact?

Even though some literary work is done, there are gaps between big data theory and supply. Many questions and supply chain practices remain unanswered, e.g., how to leverage big data and unstructured supply

chain information. It's been argued that utility of digital info will increase spending and protection management tools. Additionally, limited research has been done on the impacts of big data on client satisfaction, operational efficiency, better cost and pricing savings, along with real time data analytics in the supply chain business. This analysis is designed to gain insights into these steps to help those by using big data, thereby adding considerable value to the supply chain business.

## 2. LITERATURE REVIEW

A current literature has examined the impact of big data on SCM on various factors - data science, analytics, IoT, demand management and vendor evaluation - as summarized and discussed in Table 1.

**TABLE 1: COMPARISON OUTCOMES FROM FORMER STUDIES**

Finding	Segment & Author	Scope for further research
Using quantitative and qualitative analysis, improve supply chain planning and competitiveness. Analysing past data and integrating it enables us to create power. Development of analytics solutions to lessen obsolescence of products, and wastage. Use of big data analytics to improve market competition, and to start new opportunities, external or internal sourcing of information, data quality management, and data usage encounter strategies	Analytics (Chen, 2020)	Managers must understand and accept the function of big data, big data and predictive analytics and its implications for supply chain decision making.
Emergence of need management. Creating concurrent execution of supply chains. Inventory costs are lower and faster. The lean and agile methodology is used in demand management. Using big data in decision making, i.e. logistics planning and scheduling, using data gathered using RFID on the	Demand management (Fernandez-Viagas & Framinan, 2022)	Better quality requires the use of more advanced systems, with enhanced technologies. Supply chain information management is lacking in many aspects.

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manufacturing shop floors. Improve SCM by combining supply chain quality control and technology.		
Big data analysis in SCM helps improve business processes, costs, functions, and service levels. In many industries, advanced analytics will become a decisive competitive asset, and a core component in companies' efforts to enhance performance using data science principles. Utilize RFID cuboids to create data warehouses, map with other cuboids, and carry out logistics operations using spatial temporal sequential logistics trajectories.	Data Science (Dospinescu & Strainu, Implementing Monitoring Systems in Mobile Applications- a Case Study, 2014)	Analytics will transform the ways in which supply chains are created and managed, posing a significant and new challenge to SCM and logistics.
Utilizing social media: Data sharing, hiring for information sharing, etc. Communication skills, professionalism with shareholders. Understanding customer sentiment and enhancing sales. Environmental standards, performance, and meeting them. Selecting the best vendors to be part of the supply chain and determining risks and associated disruptions.	Vendor Rating (Oeschger & Caulfield, 2020)	Providers have to place mechanisms in place to allow customized solutions to emerge and place the strategic focus on the platform and the style of standardized interfaces. Developing insights to the possible role of Twitter in SCM.

Source: Authors

### 2.1. Need management

As mentioned in Table one, big data is used for decision-making for logistics scheduling and planning by using the data collected. It is collected through the use of sensors or RFID on manufacturing store floors to evaluate consumer demand (Ayed, Halima, & Alimi, 2015). Additionally, demand management can enable the supply chain to run concurrently, ensuring reduced listing costs, quick customer response times. Need management additionally handles the obsolescence of wastage and goods, for perishable products, that both lean and agile methodologies might be used (Buraga, Amariei, & Dospinescu, 2022). To understand

clients, global positioning system-based surveys enforce a reduced respondent burden, offer greater precision and accuracy, and incur fewer financial costs, ultimately helping comprehend related issues and demand better. GPS is a satellite-based navigation system, often adapted for surveying, because it can provide a place immediately, without the importance to evaluate distances and angles in between intermediate areas (Balbin, et al., 2020).

### 2.1.1. Total quality management and logistics

The 3 essential phases of supply chain procurement, creation and distribution are undergoing transformation to continue with competitive pressure and market globalization, and to guarantee a fast response to the customer. Competitive strain forces firms to lower costs and improve customer care by using IT and logistics choices (Dospinescu & Perca, Technological integration for increasing the contextual level of information, 2011). Appropriate control between the different phases of a supply chain guarantees a near perfect supply chain version. Correctly forecasting customer demand is an important element of providing a high-quality service, ultimately also leading to a good effect on vendor rating. Chen (2020) mentioned that the customer's requirements must be incorporated in the improvement of merchandise and process service, even further emphasizing the job of complete quality management methods in relation to client satisfaction (Chen, 2020).

### 2.1.2. Build-to-order supply chains

A build-to-order supply chain tactic can help enhance the competitiveness of an organization by meeting the needs of specific customers through leveraging the advantages of outsourcing and IT (Babar & Arif, 2019). It's among the important aspects in improving operations and facilitating the implementation of build-to-order supply chains (Fiore, 2019). Neilson et al (2019) has mentioned that the potential future of supply chains isn't that there'll be just chains or maybe no chains in many, but that they'll transform into demand networks (Neilson, Ben Daniel, & Tjandra, 2019). As an outcome, we posit the following:

H1: Demand control is positively moderated by the effect of big data, resulting in effective supply chain management.

## 2.2. Seller rating

Vendor rating is yet another deciding factor in the supply chain business. Social media, for example Twitter, Facebook, news services, etc., could be used for sharing information, employing experts, communicating with stakeholders, measuring customers' sentiments regarding companies' delivery services, along with

product sales performance, and analysing parameters to mitigate disruptions and risks (Zhu, Yu, Y., Ning, & Tang, 2019). Moreover, social networking allows companies to rate different vendors on these elements.

### 2.2.1. Analysing the qualitative and quantitative characteristics of the vendors

It is essential to determine the right source of material in the correct quantity. It is important that vendors choose their vendors based on the quality of their service, their ability to deliver on time, and their price, not just because they are readily available (Sierpiński, Turoń, & Pypno, 2018). A structural interpretive model could be used to demonstrate the interrelations between various criteria and their significance in the seller selection process (Hussein, et al., 2018). In addition, certain qualitative elements, such as attitude "willingness to work" and after-sales service "may be analysed to develop the basis for vendor selection".

### 2.2.2. Seller choice systems

Seller choice methods could be split into different types depending on the time frame and content. Vendor selection methods use the AHP framework to segment customer and supplier relationships regarding time, and the dynamics of integration between the supplier and the consumer, and by defining the choice criteria to be incorporated in the vendor choice system (Montoya-Torres, Moreno, Guerrero, & Mejía, 2021). Integrating all these choice criteria in the vendor choice system will help determine ratings for vendors. Consequently, we hypothesize as follows:

H2: Vendor rating is positively moderated by the effect of big data, resulting in more effectively supplier-customer relationships and therefore effective supply chain management.

### 2.3. Big data analytics

The use of big data analytics within SCM happens to be called SCM information science. This includes innovative quantitative and qualitative evaluation to a great amount of unstructured and structured data. This type of analysis includes predictive analytics, business analytics, big data analytics, and supply chain analytics. Predictive analytics is a significant element in SCM in forecasting company trends and anticipated demand, minimizing stock outs, even during times of unexpected demand, as recently. It may be utilized to recognize the hidden opportunity of SCM regarding the abilities required (Gohar, Muzammal, & Rahman, 2018). Big data analytics are used to improve industry competitiveness and boost data quality management, and the data usage experience. A good relationship has also been shown between keeping the quality of the perceptions and big data of firms in developing big data analytics through external or internal sourcing of information (Fiore, 2019). Despite the countless advantages of big data in supply chains, you can find

certain barriers to using predictive analytics, like the absence of competent professionals, lack of recognition, and lack of resources for training the coming generation of information experts in the supply chain sector (Buraga, Amariei, & Dospinescu, 2022).

### 2.3.1. Predictive analytics and forecasting

Predictive analytics of product sales information could be used to foresee and forecast potential need for goods. Predictive analytics is also used to examine consumer purchase behaviour and supply purchase ideas (Ghofrani, He, Goverde, & Liu, 2018). The use of sensory networks to foresee the remaining lifetime of perishable foods can also be likely with predictive analytics. Consequently, we recommend the following:

H3: Data analytics, and insights in client need patterns, have a major effect on controlling need in supply chain management.

### 2.3.2. Tracking tools

Goods Tracking tools which use sensory and tracing information supply assistance for supply chain decision making regarding logistics and SCM. show that sensor data driven supply chains show better pricing models and better performance (Hussein, et al., 2018). To enhance in-transit mobility, IoT will significantly alter the way the supply chain operates, particularly how supply chain leaders access information.

### 2.3 Vendor-managed inventory

Vendor-managed inventory and centralized planning; forecasting. Lack of collaboration among vendors causes problems in inventory management, particularly with perishable items (Biuk-Aghai, Kou, & Fong, 2016). Based on the sales data from retailers, centralized forecasting and planning can be used to forecast the whole supply chain and guarantee better responsiveness to demand through enhanced accessibility of products.

### 2.3.4. Take of analytics to enhance accuracy

Issue forecasting can be used to deal with possible issues proactively before they happen through predictive monitoring strategies, like machine learning, and constraint pleasure using quality of service agreements (Chen, 2020). Predictive monitoring can help lower lead times by seventy %. Accuracy and accuracy are improved as many as fourteen % utilizing constraint pleasure through quality-of-service agreements (Zheng,

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et al., 2015). Furthermore, twenty-three % usually enhance the recall fee using machine learning, and constraint pleasure. Consequently, we posit the following:

H4: Data analytics driven with big data has a huge impact on client satisfaction in SCM.

#### **2.4. Big Data, predictive analytics, and data science**

Big Data, predictive analytics, and data science all called BDA, play a crucial role in decision-making. The BDA additionally ensures competitiveness by looking at the past and future integration of business processes, costs, and service levels of businesses. In many industries, advanced analytics is apt to turn into a decisive competitive asset (Sierpiński, Turoń, & Pypno, 2018). It is a key component in a company's attempts to enhance performance using information science principles. Use of RFID cuboids to construct information warehouses, mapping with other cuboids, and utilizing spatial temporal sequential logistics trajectories to carry out logistics operations are examples of the application of information sciences in the supply chain sector (Fernandez-Viagas & Framinan, 2022).

Shared information about corporate logistics is used to enable the integration of disparate info among supply chain partners. Sharing strategic information and customizable information. Information technology will ensure gains in symmetry and performance of participation. The biggest contribution to competition in IT infrastructure is investment in IT. Capabilities of the dynamic supply chain. We therefore propose the following:

H5: In vendor processes, data science has a significant effect on vendor selection, and score in supply chain management.

### **3. RESEARCH METHODOLOGY**

Primary and secondary data were used in the research. Secondary data was gathered by a literature review of seventy-nine articles published in ISI Thomson Reuters, resulting in the identification of the independent variables argued to impact big data in SCM. Five distinct elements are demand management, vendor ranking, statistics, IoT, and information science. These separate variables influence the function of big data within SCM. A survey was carried out to investigate this. Figure 1 illustrates the connection between the effect of the 5 independent variables, and the big data on the SCM.



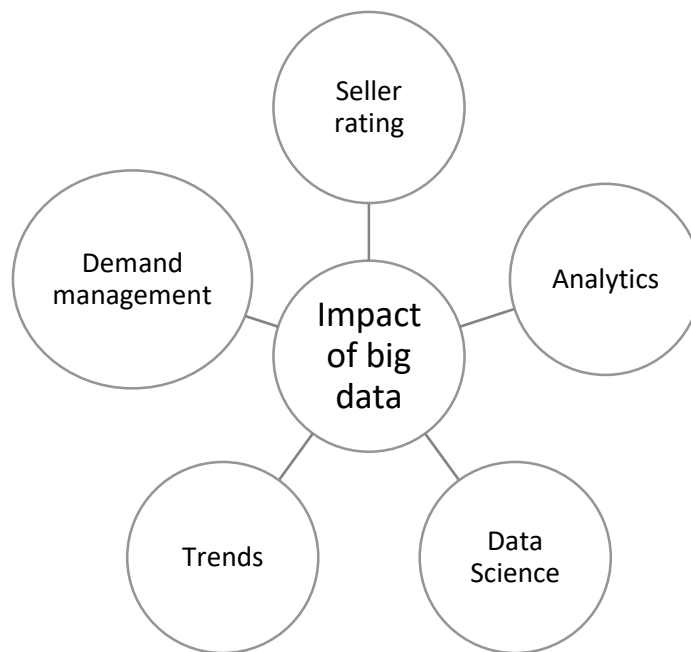


FIGURE 1: FRAMEWORK OF RESEARCH

Source: Authors

### 3.1. Information collection

An email invitation was sent to SCM professionals to finish the internet survey questionnaire used in the group of main information. The questionnaire was created using questions of validity and reliability, which are solidly confirmed in documents in high influence journals. Pre-testing of the questionnaire was performed with a sample of sixty-three business participants, each of whom had techno functional expertise in in-depth knowledge and SCM of big data and the applications of it across industries, for example manufacturing, services and trading. Feedback from personal interviews and participants with several pros, specifically chief executive officers of top companies in Singapore, was utilized to enhance the questionnaire. The last questionnaire contained 5 measures for the 5 impartial variables, and 3 to 5 questions to calculate each of the dependent variables, in addition to 3 questions regarding the market profiles of the survey participants. A five-point Likert scale was used to calculate the indicators

The respondents were chosen based on effective networking with workers of multinational companies with a worldwide presence, and experiencing primary competence, and knowledge in SCM, which spread throughout the United States, the Middle East, Europe, Australia and Asia. The goal of the research was to motivate the respondents to participate, along with a report of the study findings, which was also provided as an incentive. The email invitation with all the questionnaire was sent to 1006 professionals with good

practical expertise of the supply chain sector, in addition to IT. Of these, just 349 workers responded. Unusable and incomplete entries have been omitted from the last information set, leaving 287 usable replies. Table three provides a summary of the market attributes of the respondents.

### 3.2. Information analysis

Information collected from the main investigation technique was analysed by using VERIFY 1.1.1, a modelling instrument for variance based structural equations, helping improve the analysis framework and testing the hypotheses. VERIFY relies on a composite modelling strategy to evaluate hypotheses, which has the benefit of not imposing normality situations on the information. The analysis was carried out in 2 steps: in the first phase, the quality of the structural design was estimated; in the next phase, the reliability and validity had been measured to ascertain the ideal design healthy, path analysis was performed, and the product variables have been estimated.

TABLE 3: RESPONDENTS BREAKDOWN

Item	Measure	Frequency	Percentage
Industry	Manufacturing	223	66.8%
	Trading	76	22.8%
	Services	35	10.5%
Professional level	Junior Executive	87	26.0%
	Middle Level Executive	120	35.9%
	Senior Executive	50	15.0%
	Management Level	77	23.1%
Region	North America	287	85.9%
	Europe	47	14.1%

Source: Authors

### 3.3. Reliability

The reliability of the healthy product was driven by Cronbach's alpha, which suggests a great degree of reliability. Composite reliability, which is a sign of integrity and homogeneity of the product, was assessed by Jöreskog's rho. The data for every construct is provided in Table four.

### 3.4. Convergent validity

Convergent validity methods the indicator variables utilizing conformity scores, and examines the construct validity. For every construct, the typical variance extracted must be in excess of 0.5. As shown in Table five,

the minimum AVE great is 0.46 and therefore the measurement requirements of the study design are satisfied.

### 3.5. Discriminant validity

The degree of discrimination between the variables was examined, and contrasted with various other constructs. The square root of the AVE associated with a variable should surpass the AVE of another variable. Table five shows the unit has discriminant validity.

### 3.6. Saturated and estimated unit fit

Concerning unit healthy, a value of 0.3 indicates a great match for each saturated and estimated model, while a value of 0.1 indicates poor validity. Residual values of between 0.05 and 0.08 indicate a reasonable degree of approximation error. Tables six show the standardized root mean square recurring values of the saturated and estimated designs respectively, showing values inside the cut off of 0.08.

### 3.7. Structural situation modelling

For structural situation modelling in VERIFY 1.1.1 with an unfamiliar public, it's possible to work with bootstrapping ways. The degree of significance is tested using t-statistic values. 4 hypotheses have been tested in the outcomes, and the research was verified against the t values, as found in Table seven.

**TABLE 4: RELIABILITY AND VALIDITY OF VARIABLES**

	Construct R2 (Composite reliability)	Jöreskog's rho ( $\rho_c$ )	Cronbach's alpha( $\alpha$ )	AVE
Impact Of Big Data	0.59	0.78	0.75	0.56
Demand Management		0.74	0.64	0.57
Vendor Rating		0.71	0.61	0.46
Analytics		0.76	0.72	0.47
Data Science		0.74	0.65	0.58

Source: Authors

## 4. RESEARCH FINDINGS

The first hypothesis, H1, tackled the outcome of demand control on narrowing the gap between the supply chain and the demand chain. Demand management has a significant impact, and hence H1 is backed. This suggests that demand management can contribute tremendously to narrowing the gap between SCM and

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supply chain management, with the use of big data resources in the supply chain business. This contrasts with an earlier analysis, which discovered no specific evidence of an effect of need chain management on aligning supply and demand inside the tight.

The next hypothesis, H2, concerned the impact on low-cost operations and cost savings from an integrated vendor selection program, and requirements that come with big data technologies. The effect of cost savings is extremely important. Consequently, H2 is backed. This suggests that vendor rating and selection devices have a major impact on reducing costs and facilitating inexpensive activities in the supply chain business. Nevertheless, an earlier study proposed that vendor choice methods aren't exploited to their full potential to deliver advantages for client efficiency and supply condition.

The 3rd hypothesis, H3, examined the appearance of analytics on client need patterns, which have a major effect on controlling need in the supply chain business. Need management driven by analytics is important, and hence H3 is backed. This suggests analytics has a tremendous impact on managing demand in the supply chain business. Nevertheless, earlier experiments have pointed to gaps in need management, and then centralized forecasting methods focused on offering better need management techniques to fight demand variations in the supply chain business.

The 4th hypothesis, H4, analysed the outcome of analytics regarding the provision of a better level of client satisfaction in the supply chain business. The result of analytics is again significant, and hence H4 is backed. This shows that analytics has a tremendous effect on providing a better level of client satisfaction in the supply chain business. Nevertheless, earlier experiments have pointed to gaps in innovation and solutions targeted at offering improved data driven techniques to enhance competitiveness in the supply chain business.

The 5th hypothesis, H5, examined the appearance of information science on vendor rating and the subsequent choice of vendors in the supply chain market by using big data. This particular influence is extremely important (t value = 5.97; ninety-nine %). Consequently, H5 ( $\beta = 0.49$ ,  $p < 0.01$ ) is backed. This indicates that information science has a huge effect on vendor rating operations in the supply chain business. In comparison, earlier experiments pointed to the lack of specific essential criteria and the vagueness of current in the vendor choice process in the supply chain business.

**TABLE 5: DISCRIMINANT VALIDITY**

Construct	Impact of big data	Demand management	Vendor rating	Analytics	Data science
Impact of big data	0.60				
Demand management	0.34	0.60			

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Vendor rating	0.47	0.30	0.49		
Analytics	0.49	0.29	0.47	0.49	
Data science	0.37	0.28	0.26	0.34	0.61

Source: Authors

All the study findings regarding the hypotheses are different and include improved contributions to the current body of literature. This is illustrated by the outcomes of the bootstrapped structural item shown in Figure two, combined with the path coefficients depicting considerable correlations between the dependent and independent variables.

**TABLE 6: ESTIMATED MODEL**

	Value	HI95	HI99
SRMSR	0.114	0.061	0.066
d <sub>ULS</sub>	4.109	1.169	1.325
d <sub>G</sub>	0.827	0.521	0.569

Source: Authors

**TABLE 7: HYPOTHESIS TESTING RESULTS**

Hypothesis	Effect	Coefficient ( $\beta$ )	Mean value	Standard error	t-value	Supported
H1	Demand management → Impact of big	0.09	0.08	0.06	1.43	YES
H2	Vendor rating → Impact of big data on SCM	0.24	0.24	0.06	3.78	YES
H3	Analytics → Impact of big data on SCM	0.28	0.23	0.06	3.77	YES
H4	Analytics → Demand Management	0.52	0.52	0.07	6.68	YES
H5	Data science → Vendor Rating	0.49	0.49	0.07	5.97	YES

Source: Authors

## 5. IMPLICATIONS FOR THE SUPPLY CHAIN MARKET, AND STAKEHOLDERS

The primary key factors regarding the use of big data are analytics, IoT, and information science. Each of them aims to provide new values on the market and really influence the adoption of big data technologies in the supply chain business. Operational excellence, caused by big data technology, can easily boost productivity, and help improve the competitive advantage of firms in the supply chain business. Analytics can increase client satisfaction and ultimately help retain customers (Chen, 2020). IOT offers real-time visibility, reflected far more broadly across the market. Low-cost operations and cost savings could be enabled by wearing better vendor selection methods, accompanied by quantitative and qualitative analysis of efficiency using big data equipment (Neilson, Ben Daniel, & Tjandra, 2019). Big data may additionally help narrow the gap between demand and supply chains, using data backed demand forecasts and insights to the buyer's purchasing behaviour. The adoption of big data technology can develop extensive value added and financial gain for firms, and it'll quickly be a regular throughout the market.

## 6. CONCLUSIONS, SCOPE, AND LIMITATIONS OF FUTURE RESEARCH

This study has centred on the effect of big data on the supply chain market in terms potential to produce new value by enhancing functional excellence, enabling cost saving measures, increasing real-time visibility and customer satisfaction, and narrowing the gap between supply and demand management, therefore influencing the adoption of big data technologies. Nevertheless, the fact that big data technology is in the nascent stage, combined with the high monetary costs and the absence of knowledge concerning its implementation, hampers the adoption of it's in the supply chain business (Balbin, et al., 2020). As more companies start to adopt big data engineering, the monetary gains and competitive advantages suggests scope for consideration about these elements to tailor big data technology to be implemented in the supply chain business.

In terms of managerial implications, the study provides a clear finding as to which factors of analytics contribute to the impact and to what extent do they really impact the supply chain in multinational companies. The findings will help managers and executives make decisions about employing big data tools in their supply chain process. They also learned about what factors to particularly focus on to rip the best benefit from big data tool application.

Big data technology, that comes with demand management, analytics, vendor rating, cloud computing, data science, IoT, is a crucial element in enhancing operational excellence, offering price savings, real-time visibility and customer satisfaction, and lowering the spaces between the demand chain and the supply chain. Our research findings indicate that each of these factors provides powerful arguments for the adoption of big data technologies (Fernandez-Viagas & Framinan, 2022). These are building blocks that firms can

use to build the strategy to innovate, capitalize, and monetize values for their firms to ensure they've a competitive advantage over their competitors. Presently, numerous companies in the supply chain business are analysing the financial viability of developing large details technology and are in the system of creating the first move towards utilizing the unique value. Other firms will catch up eventually, and big data technology will be used across the market.

One of the major limitations of the research is that it was conducted only in the western countries: USA, Canada, UK, France, Romania which are mostly developed. Since the study does not include developing countries from either Asia or Latin America, further research can be conducted to better understand the implications of employing big data particularly in developing countries.

Further research can be conducted to understand the impact in the developing markets as well. Since developing economies comprise of large number of countries, and that they are ripe for implementation of new technology like big data analytics, it will be interesting to observe and understand the impact. Moreover, long term studies can also be conducted to see the implications in long term. That will give a deeper level understanding of the impact, trade-off between analytics and supply chain in multinational companies.

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