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Implications of IT Infrastructure and Big Data Characteristics on SCOR Model for Performance Measurement

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Abstract: ***IT and big data are becoming the essential part of the firm's success. Aim of this paper is to examine impact of IT infrastructure enabled big data on performance of the firm. For dearth of the understanding and evidences the case study of an automobile manufacturing firm (OEM) has been used, the firm has well developed IT infrastructure and using the big data. The proposition development study identified the positive relationship between the IT infrastructure enabled big data can leads to the operational and financial performance of the firm using the SCOR (Supply Chain Operation Reference) model. The paper includes a case study approach, in which a case study of large automotive manufacturing firm is studied. The results may not have implications in the small firms which does not have a scalable model study establishes a link between IT infrastructure and Big Data Analytics capabilities and gives a way how IT enabled big data analytics can enhance organizational performance.***

Key Words - Big data Analytics, SCOR Model, IT Infrastructure, Automotive production, Supply Chain

I. INTRODUCTION

Now a days, business analytics and big data are being used by almost all the large organizations as it increases the capabilities and responsiveness of the firms towards markets. Value chain of the firm is one of the most important from the business point of view. To obtain competitive advantage in the dynamic environment, it is important to have not only responsive but also agile supply chain (Mentzer et al., 2001).

For example, in today's competitive time, having the same type of the product, production facility, marketing and sales plan even the production cost and sales price the company which has the more effective supply chain will win the market and gain the competitive advantage. On the other side, mutual understanding between the focal firm and supplier for that firm also increases performance of critical chain.

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This study proposes the use of big data along with IT infrastructure in order to measure the performance of supply chain via widely accepted measurement model for value chain called SCOR. The proposition development along with the scale development for above mentioned constructs will be helpful for the future empirical studies.

Also, study broadly analyses some key features of the performance of the supply chain of an organization with help of SCOR Model, which can be impacted by Big data capabilities. On the other end, paper also gives antecedents or perquisites for using the big data capabilities into the organization, and talks about why big data capabilities has to be developed by the organization and what are the pre requirements or capabilities which organizations must have for exploiting the big data.

RQ 1: How bigdata is supply chain context?

RQ 2: How big data is useful in SCOR model for performance measurement?

RQ 3: How IT is helpful to make a data driven decision for enhancing supply chain performance?

In the next sections theoretical understanding about the supply chain, big data, SCOR model has been given with the understanding of constructs taken into study and theoretical models. With the linking of the constructs with each other, propositions are developed, and model has been described. The case study is also included for the evaluating the model and et the end managerial implications are given in order to execute in an organization and taking the benefits.

II. THEORETICAL BACKGROUND

Resource Based View

Resource based view (Barney, 1991) postulates that, firm creates advantage by getting as well as creating, joining, and successfully sending its physical, human, and hierarchical assets in manners that include remarkable worth and are hard for contenders to mimic. Here big data is a valuable and inimitable resource instead of just technology (Bharadwaj, 2000; Bhatt and Grover, 2005). Data driven culture for a data driven decision making of a firm is developed and worked over a period. Which contrasts from an organization to organization.

Supply chain Management

Distinguished authors have defined supply chain in their own way (Monczka; LaLonde and Masters, 1994; Houlihan, 1998; Cooper et al., 1997; Jones and Riely, 1985). But, in the most suitable way supply chain can be defined as a strategic and systematic coordination of tactics of business within a firm or across firms for purpose of improvement in performance of individual firms as well as network as a whole in a long run (Mentzer et al., 2001).

Supply chain partners may be the different organizations or within the organizations, but as per the definition, they acts as an one organization. Supply chain is not an organization but it acts as the functional wing of an organization. Due to the involvement of many partners managing the supply chain has become increasingly complex as the number of process and entities increased.

Big Data

With the increasing in the communication technology, data collection has been increased rapidly. There is an explosion of data as the data saving cost is decreased (Trkman et al., 2010). It is critical to analyse data appropriately and take full leverage by exploiting. If the available data is not used in a proper manner than it will be of no use, which leads to the GIGO (Garbage in Garbage out) (Hauser, 2007).

With the increase in the supply chain partners and data from the each customer touch points, lot of complex and heterogeneous data has been evolved, which increases the complexity in the measurement of the data. As per the famous quote you cannot control what you cannot measure, measuring the data is critical for organization in order to gain competitive advantage as data can serve as a resource to a firm. On the other side, data alone are not sufficient, for gaining the competitive advantage, data has to be assimilated and converted into the insightful information (Sahay and Ranjan, 2008), which again turned in to the knowledge and apply it.

Supply chain partners may use the different systems, which may or may not be compatible with the system of other partners, which creates the dissimilarity into the data and increases the complexity with the measurement. Some partners are using the EDI (electronic data integration) where other are using the XML (extensible mark-up language) (Malhotra, Gosain and Sawy, 2007). Which creates the dissimilarity in to the data, which cannot be converted in to the information and knowledge with the traditional system.

Big data comes with the enormous capability to analyse all the type of data, no matter in which format data has stored and shared. Big data follows the HACE theorem, which means that, big data can handle heterogenous, autonomous, complex data which has the evolving relationships (Wu et al., 2014). Apart from these, big data supported by distinguished characteristics of 4Vs, including Variety, Volume, Velocity and Value (Palanisamy and Thirunavukarasu, 2017; Manikya et al., 2011).

With the characteristic like variety, it is possible to handle, measure and analyse almost all the types of data despite of their form, the data may be in the structured form, semi structured form or unstructured form. The structured form includes the defined data type and queries are into the tabular form or in the SQL (sequential query language form), which is not complex and can be analysed and controlled with the traditional systems also. The data included in this format are like the PoS (Point of sales) data, product description, product pricing data etc. the semi structured form of the data includes the data with the minimized structures but have the self-explanatory power with the self-describing nature. Which includes data from some devices or knowledge from the customer in terms of complains, innovation idea etc. shared on the social media like Facebook, twitter etc. by using the text analytics skills of the big data, these types of data can also be analysed. Unstructured data does not follows any kind of the structure or format which includes some data which are not digitalized but are important from the perspactive of the firm.

With the characteristic like volume, the big data can handle the data if the enormous volume. The data can be obtained from the customer touch points, procurement side (upstream), logistic side (downstream). This includes end to end synchronization for ultimate supply chain (Mentzer, 2001). organizations may have data from the supplier's supplier, supplier, finance provider, internal operations, logistics, customer, customer's customer and market research firm. This will include very large amount of data, which can be handled by the big data framework.

The third characteristics of the big data is velocity. Any lag time between the data analysis can turned in to the dared consequences for the organization. A week-old data is useless, as it cannot describe the issues and opportunity of today. It is important to surface the issues in order to solve them for the smooth operations. With the velocity, high volume of data can be analysed in the fraction of seconds which gives the dynamism and speed to the organization.

Fourth and most important characteristic of the big data system is value. Which is the consequent of other three Vs (variety, volume and velocity). Which means that with the proper exploitation of other three Vs, big data will create the value for the firm and helps the firm in gaining the competitive advantage.

From all these charlatanistic big data can be defined as highly complex and large in volume which requires advanced techniques to enable storage, capture management and analysis of information (US Congress, 2012).

SCOR Model

SCOR model also known as a business process reference model. Model gives a far reaching toolset connecting the business procedure to the measurements, best practices and innovation. Significant returns can be generated for the organizations by using this model. It is the most promising model which provides the efficient methodology for recognizing, assessing and checking the inventory network execution for the start to finish network (Trkman et al., 2010).

Li, Su and Chen (2010) has operationalized the SCOR model and presented list of fundamental production network activity measurements to guarantee the quality in value chain network.

SCOR model works on four different level which includes the matching the performance with the business objectives as the starting point and implementation of the model as the end point (Li et al., 2010).

With the integration of the business process reengineering, benchmarking, process estimation in to the cross useful structure, the model empowers to deal with all sort of client collaboration (from request section to the paid receipt), item exchange (start to finish production network) and market exchange (total interest and the satisfaction of every single request) for the business (Li, Su and Chen, 2010).

From the many tenants on which the SCOR model can be utilized like forecasting and inventory management (Chae, 2009), cost and reliability (Liu, 2009; Person and Arladi, 2009; Hwang et al., 2008), plan, source, deliver and make (Gulledge and Chavusholu, 2008). From these five tenants including Plan, Source, Make, Deliver and return for end to end supply chain is selected. Plan includes the designing the supply chain in a way that achieves the competitive advantage (Harland et al., 2001), which includes the collaboration on all level with network partners, creating mutual understanding and risk & return sharing with the supply chain partners ref (find out in SC paper). Source includes all the process for acquiring the raw material and inventory control including the supplier selection, supplier proximity, supplier network development, supplier evaluation etc (Li, Su and Chen, 2010), (find out in SC paper). Make includes all the process of using the inventory received from the suppliers and making the product which includes production and plat facilities, packaging, equipment's for manufacturing etc (Li et al., 2010; Zhou et al., 2011). Delivery includes the logistic and transportation management, warehousing, delivery reliability ref from above+ SCM paper. And the return process includes all the kind of the reverse logistic, which means the up stream material flow, which includes product returned, product repaired (Rai et al., 2006), product and inventory returned for the sustainability (Linton et al., 2007).

IT Infrastructure

It infrastructure may be defined as "the physical IT assets which firms have, which comprises of the transmission mechanics and computer with sharable networks, and hi tech platforms (Ross et al., 1996; Weill et al., 1996)."

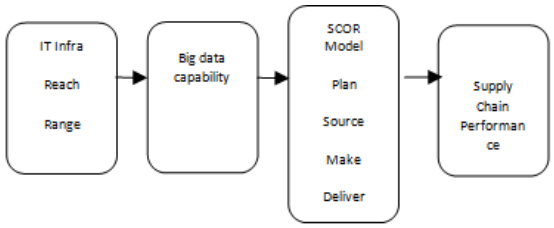

Figure 1 – Theoretical Model

(This model explains how IT infrastructure enabled big data capabilities will help in the performance evaluation using the SCOR model)

IT infrastructure of firm have many measures (Weill et al., 2002). However, in this study the two measures of IT infrastructure are covered. As we believe that these two measures can cover almost all the other measures of IT capability, on the other end, we believe that, these two measures are impacting more on usage of predictive analytics using big data of the firm.

Range

The range is defined as degree to which various information seamlessly and automatically shared across systems (Bharadwaj, 2000). In the practices of supply chain mainly three flows are important material flow (which will flow in the downstream most of the time, only some time material flow will flow in the upstream like the product returned or product repaired) (Rai, Patnayakuni and Seth, 2006), Financial flow (which mostly flow the upstream as the customer will pay the money to retailer in exchange with the product, retailer to wholesaler, distributor, focal firm, supplier and so on…) (Rai, Patnayakuni and Seth, 2006), and the Flow of Information (which will flow in both the directions, as the upstream has to know about the customer order and the downstream has to know about the delivery status of the ordered products). Moreover, knowledge flow is also a part of the information flow, as from the crunching the information only, the knowledge can be created. In supply chain management practices up stream partner must have a knowledge about the downstream. For example, OEM should know the requirements of the customer for an efficient business model. On the other end, if the supplier for the focal firm also know the customer's requirement and needs, the efficiency of the firm will increases many fold (Subramani, 2004). Moreover, the bullwhip effects can be controlled (Mentzer et al., 2001). On the other side, customer should also have the knowledge about the OEM products, standards and brands. All types of knowledge to, from and about customer covered in Information flow.

Reach

Reach determines remote location where platform can have an access to (Keen 1991), which means that despite of the location one can have the access to data and information saved on the system. Capability of reach is an important, as it is not necessary that all the supply chain partners are located at one place. As supply chain partners may be the different organizations they may be on the geographically distinguished place (Mentzer et al., 2001).

Performance

With the help of the SCOR model supply chain performance dimensions can be described in the multiple dimension of the reliability, responsiveness, flexibility, cost and efficiency in asset utilization (Li, Su and Chen, 2010). The performance here can be measured in term of the supply chain surplus (Yoon, Lee and Schniederjans, 2016) which is also called as a positive cashflow for the supply chain. On the other end, supply chain performance can be measured by customer facing supply chain quality performance and Internal facing quality performance which is also represented by the firm specific business performance at the level of focal firm and all supply chain (Li et al., 2001).

III. METHODOLOGY

Theory building is a main motive of the study. For validating propositions and theory, three step approach is used. For a first stage, initial pool of measurement items was generated from the systematic and extensive literature review, which helps in item generation as well as understanding of the theory. two academicians reviewed initial items to check relevance. For convergent and discriminant validity Q sort method was initiated. Four industry experts holding a leader position in logistics, procurement, supply chain department with experience and four academicians having a publication in related area were selected. Constructs were described by moderator and experts were asked to classify the items in to the constructs with one NA category for omitted items. The result were evaluated based on hit ratio (Moore and Benbasat, 1991) and Cohen's kappa (Koch, 1960). After literature review scale development process was initiated. Total four rounds were performed to get the correct items for each construct. Process got stopped when raw agreement score, hit ratio and Cohen's kappa found to be above 0.90.

IV. RESULT AND ANALYSIS

After escalated writing audit the proposed things were sent and kept for the scale development process. The bury judge unwavering quality and build dependability was checked. All out four rounds were acted so as to get the right estimation scales for the develops. Hit proportion, Raw understanding score, and Cohen's kappa were seen as above 0.90 from the outcome. The perfect estimation of Cohen's kappa ought to be between 0.81 - 1 for the ideal understanding (Koch, 1960). A procedure of estimating the entomb judge dependability with the end goal of scale advancement can be halted when Cohen's kappa increments to 0.81, as the worth shows the ideal understanding between the judges, and along these lines the estimation can be the solid one. The last things for every one of the builds is portrayed in the table beneath.

Table 1: selected items for each construct after four rounds

Construct	Items	References
IT Infrastructure	My company has implemented state-of-the-art computing I can have access to the important data even if I am on field and not in the office IT systems of my company converts reports in our prescribed format, even though it is obtained from various sources and different formats	Bhatt and Grover (2005) Bharadwaj (2000) Keen (1991)
Big Data Capabilities	My firm analyses interrelationships among functional areas using computational power My firm uses a large dataset to identify patterns to make economic values My firm analyzes purchase transaction records based on variety of formats to track purchase, delivery and return behaviour	Boyd and Crawford (2012) Agarwal and Weill (2012) Manikya et al. (2011)
SCOR Model	PLAN My company analyses supply/demand balancing by 'what-if' analysis My company works with supply chain partners to create joint business improvement plans My company works with the supply chain partners to create order fulfilment cycle time SOURCE My company creates ling term relationship with suppliers My company uses formal evaluation process for supplier performance My company has important information of suppliers' financial status, production capacity etc. MAKE My company schedules regular and preventive maintenance My company ensure the quality in production, testing and packaging My company has implemented statistical processes and control methods to ensure quality DELIVERY My company is giving importance to high quality of delivery services My company ensures quality services from logistics provider My company meets the regulatory requirements for import/ export and domestic delivery RETURN My company collect data on regulatory compliance in case of return My company is tracing the returned product from source	Li et al. (2011) Zhou et al. (2011)
Performance	My company has reduced cycle time My company can accommodate demand variations My company can respond to new markets, new competitors and new products My company has improved product quality My company has increased sales revenue My company has reduced cost of goods sold	Li et al. (2011) Sezen (2008)

Case Study

A leading car manufacturing firm has well implemented IT infrastructure and using big data for almost all types of analytics. In the automobile business customer's customer is the end user of the product, as in this business focal firm, who is also the original equipment manufacturer and manufactures the vehicles is leader of a network. The supply chain leader appoints the dealers at the premium locations, where there is a market and substantial potential to buy the automobile vehicles of their made. Focal firm provides the IT infrastructure to the dealer at their own dealership locations, which captures all the operations done in to the dealership from the inquiry till the final delivery and post purchase satisfaction of the customers also. On the other end in the after-sales service department also, similar kind of infrastructure is created to capture all the services related operations. On the other end, OEM websites also give complaint pages, from which the customer complaint and/or feedback can be collected in the digitalized way. By analysing all the things simultaneously which may have different type of data structure by nature, focal firm can aim towards the better product and better services, which ultimately leads to the business growth. This IT infrastructure can helps OEM to forecast the future demands also, which can be drilled down to the zone wise, state wise and even district wise future demands for their products and allows OEM to make the future plans according to the same. On the other side, OEM provides the infrastructure of IT towards their supplier also, in order to enables JIT (only for limited parts of the products), Vendor managed inventory (VMI) and other operations. By providing the IT infrastructure to the suppliers and getting the reports or the data from the supplier side, OEM can analyse the data and convert them in to the useful information, insights and ultimately knowledge about the supplier's capabilities and capacities for providing the raw material.

All this analysis done into the real time with the capabilities of the big data, which ultimately helps the OEM to take the suboptimal decision quickly.

Proposition development

IT infrastructure like reach and range can be the antecedents for using the big data. As IT infrastructure pertains to be a technology resources in organization (Powell and Micallef, 1997), it is important to exploit IT infrastructure for any technology usage in company. IT infrastructure acts as an antecedent with the capabilities of reach.

As described, reach leads towards the integration of all the required data and information across the firm border, it is easy to integrate, collect and analyse data from all the supply chain partners at a single location. Integration provides all the critical information, knowledge to network leader to make an sub-optimal decision based on the requirement of market.

While reach helps organization to get an integrated data from all the other entities, the range aspect can collect the data from the numerous amounts of format. As the entities in the supply chain can have a different system, range can collect the data from the various systems and based on that collected reports of various type, big data can analyse that reports and gives the information, which can turn in to the knowledge.

Organizations with enough and robust IT Infrastructure are more likely to adopt big data (Sun et al., 2016), as it is used beyond the borders of an entity into the supply chain and tries to cover all the other entities into a single platform, like an entire organization. With robust and adequate IT infrastructure it is possible to integrate the data from variety of sources in different formats from different supply chain partners. With high level of IT infrastructure, high quality of information with high level of information sharing can be achieved, which helps in decision making when it is analysed (Li et al., 2006)

On the other end, reach and range criteria of the IT infrastructure can also help to build the integrative ICT (Information Communication Technology) (Bhardwaj et al. 2000). As per Kamioka & Tapanainen (2014) higher level of ICT utilization will increase the more systematic use of the big data for the data related operations and getting the insights and information from the data. When the robust IT infrastructure is there between the supply chain partners, data integration of the generated data will be robust and high-quality data can be generated and integrated, which leads towards the high-quality analysis also.

Proposition 1: Level of IT infrastructure enhances the level of big data capability

Linking Big Data Capability to SCOR Model

Many have work on data analytics, big data and value chain, (Arunachalam, et al., 2018; Hoehle et al., 2017; Nguyen,2018; Tazen et al., 2016). Also, few work has been done which links exploitation of analytics to the SCOR model (Trkman et al., 2010; Souza, 2014).

Trkman (2010), has analysed the impacts of analytics for plan, source, make and deliver on firm performance which is moderated by information systems capability with the high impact and business process orientation with the very low impact on the firm performance. Souza (2014) also provided the support for the same that, value chain analytics can be exploited for SCOR framework.

Big data can be used for the segmenting the suppliers, integrating and negotiating with them, inventory utilization, capacity layout and workforce analytics (Sanders, 2016). Lee et al (2013) has done the study for measuring the impact of big data on the production systems. Donovan et al., (2015) also given a proof that big data has huge implications in the manufacturing. Big data has its implications in the manufacturing, logistics and procurement (Singh and Lamba, 2017). There is much research done in the marketing and sales domain on the micro segmentation of the customer, predicting the customer behaviour and customer demands etc. big data has capability to contribute in almost all dimension such as plan, source, make, deliver and return (Kamble and Gunasekaran, 2019). Decision makers can get reliable and useful information about each domain of SC, when big data analytics is used with the SCOR model framework for measuring the performance of SC (Trkman et al., 2010)

Big data is also useful in manufacturing of cyber-physical systems (Huang et al., 2015), service inventory (Boone et al, 2017), facility layout (Tayal and Singh, 2016), transport and maintenance process (Mehmood et al., 2017, Zhang et al., 2017). Stentoft, Jensen and Rajkumar (2017) has assessed big data into SCOR and prioritized the applications of big data in to SCOR tenants. The priority order helps the managers to implement the big data where it is most required. The priority order is Logistics (Delivery), Service, Planning, Manufacturing (Make), Sourcing, Return.

Based on theoretical and some empirical study it can be concluded that, big data is pone of the important aspect for firm's supply chain management. The level of big data capabilities developed by firm helps in the process of analysing performance of supply chain.

With the analysis of market and product innovation (Tan, 2018), market sensing (Chae, 2015), Asset utilization (Gunasekaran et al., 2018) and cost reduction (Lee, 2017) big data can be used for planning aspect of SCOR model

Proposition 2: the level of big data capabilities developed by the firm will help firm in planning aspect of the SCOR model.

With the capabilities of analysing suppliers' strength and weaknesses and increased relationship and responsiveness of firm with the supplier (Fernando et al., 2018), big data plays a major role in negotiation and maintaining close contact with supplier. When a big data is used for procurements, it increases the flexibility of procurement and decreases the frauds in procurements (Matthias et al., 2017). From this we may conclude that,

Proposition 3: the level of big data capabilities developed by the firm will help firm in Source aspect of the SCOR model.

With the help of analysing equipment health (Kumar et al., 2017), Predicting machine failure & Fault finding (Jusso and Lahdelma, 2013), enhancing efficiency, quality, and visibility of production (Kumar et al., 2016) and reducing cycle time, processing cost, inventory stock (Kwon et al., 2014; Wong et al., 2011) and increases the scalability (Stefanovic, 2015), big data is useful in production process of firm. Hence,

Proposition 4: the level of big data capabilities developed by the firm will help firm in Make aspect of the SCOR model.

With mapping delivery lead time, performance and reliability (Arya et al., 2017) and efficient Wearhouse operations (Pang and Chan, 2017) and responsiveness to the routine and urgent orders and complaints (Fernando et al., 2018; Brinch, 2018) big data is useful for down stream delivery of the product.

Proposition 5: the level of big data capabilities developed by the firm will help firm in Delivery aspect of the SCOR model.

Big data can be used in return process via analysing customer feedback, complaints, churning (Fernando et al., 2018; Akhtar et al., 2016) and service quality, trust, market visibility (Fernando et al., 2018), which are the important process for the return. Hence,

Proposition 6: the level of big data capabilities developed by the firm will help firm in return aspect of the SCOR model.

Linking SCOR model with the performance

Planning includes the business plan development among the partners, improvement plan creation, material and demand replenishment plans. Proper planning leds towards the less hindrance in the operations process on the other end, financial flow will also be smooth with the planning. Planning process focuses on analysis based demand prediction and developing network strategies in order to fulfil demands of market. The goal of a process is to match customer demands with resources in a portable manner. Empirical evidences states the positive relationship between planning and supply chain performance. (Jamehshooran et al., 2015). Planning and designing of a supply chain is found to contribute to the competitive advantage as strategy decided on planning level only.

Source includes the decisions related to the sourcing activities which includes infrastructure and material acquisition, selecting the suppliers, managing the inventory developing the supplier network and evaluation of the performance of the suppliers. Moreover it will also include the long term relationship making activities with the suppliers for the JIT (Just In Time) Production. The primary role of **source** analyses lies in improving inbound supply chain consolidation and optimization. Empirical evidences postulates the positive relationship between sourcing activity and supply chain performance. (Jamehshooran et al., 2015)

Make activities is mainly related to the manufacturing of a final product from a raw material. The activities includes production, packaging, facility management, material flow, Make to Order, Make to store and engineer to order activities.

Moreover, it also deals with the total quality management (TQM), Six Sigma for the quality control and JIT and TPM activities to increase the operational efficiencies and decreasing the cost for the production. Make process focuses on conversion of materials rather than production or manufacturing because make represents all types of material conversions: assembly, chemical processing, maintenance, repair, overhaul, recycling, improvement, remanufacturing, and other material conversion processes. Positive relationship between make activity and supply chain performance is established in literature. (Jamehshooran et al., 2015)

Delivery activities mainly deals with the downstream delivery of the product from OEM to the consumer or the end user. Which includes logistic management, warehousing, responsiveness, order and inventory management. Moreover, the single contact point enables the agility and automatic identification. Whereas, return activity includes the product return and product repair activities in which damaged products are returned to the OEM as return or for the repair (if under the warranty).

Return activities include return policy, transportation agreement, regulatory requirements and compliances and return of the containers and defective products. Moreover, companies following the green supply chain /

sustainable supply chain will have a return policy after the end of the shelf life and/or usable life of the products. The delivery and return process includes the identification of the need for a delivery, the disposition decision making, the scheduling of the delivery, and the shipment and receipt of the returned goods. Delivery and return process positively related with the Supply chain Performance (Jamehshooran et al., 2015)

Proposition 7: The level of implementation of SCOR model for measurement enhances the SC Performance

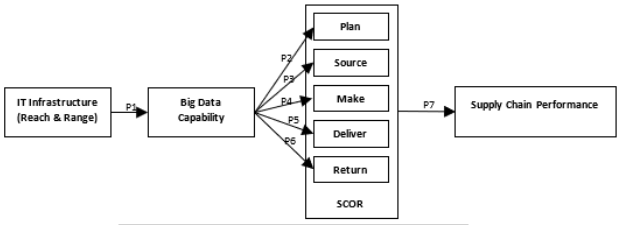

Figure 2: Proposed Model

Implications

The study theoretically observes enhancement in network performance of value chain with big data. However, the success depends on capability of big data analytics possessed.

Intervention of senior management is critical in finding the big data capabilities. The supply chain leader or the focal form should also help the supply chain partner on downstream as well as upstream side, to develop robust and state-of-the-art IT infrastructure for exploiting big data capabilities to reach at the big data goal of the organization. Big data analytics has a different impact on different tangents of SCOR. It varies according to process maturity level of network operations. Information processing needs has been affected by maturity level of process, which affects relation between big data usage and network performance. Although data driven decision making is embedded in the routine of firm and follows resource-based view, it is important to innovate the designs and systems continuously for obtaining sustainable competitive advantage for the organization

V. FUTURE SCOPE

The study has only enlightened the theoretical view by propositions through the extensive and systematic literature review. The is also a scope to develop these propositions into the testable hypotheses and validate the model on a more global scale and check the impact of IT infrastructure and big data on the supply chain performance of firm.

VI. CONCLUSION

In this paper, with the establishing the theoretical relationships between IT infrastructure, big data and its use for the supply chain performance measurement is identified with the help of systematic literature review and a case study of an automobile manufacturing firm with the basic understanding of the IT infrastructure, big data and SCOR model. We have tried to establish the theoretical relationships only based on the literature and concluded that IT infrastructure is an enabler for exploiting the potential which is carried by the big data to use the same for the performance measurement of the supply chain.

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