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SCOR model measurement and validation of empirical research to improve supply chain approaches, outcomes, and performance

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Abstract

The purpose of this article is to establish and authenticate the scale measurement of SCOR's (Supply Chain Operations Reference) model's performance parameters and the constructs extracted from SLR to implement the SCOR performance parameters as a practise in the Indian e-commerce industries used for the quantification of performance. A structured questionnaire was used to empirically authenticate and validate SCOR modules developed by a literature extraction process that includes five constructs and corresponding performance dimensions. The study included the contributions of 253 respondents working in different e-commerce industries in India. Structural equation modeling, factor analysis,

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regression weight, and moderation impact were used to examine the prominence of the questionnaires. The findings of the research outcome reveal a connection between the SCOR's embedded performance parameters and the supply-chain performance indicators. The moderating force influence on the size of employees revealed significant variations in SCOR's performance parameters and supply chain performance indicators. Industrial experts can use the research's findings as a pathfinder and performance assessment tool in the retail sector; the conceptual approach for supply chain performance is developed by following the SCOR methodologies.

Subject Classification: *M10, M31.*

Keywords: *Include plan, Source, Make, Deliver, Return, and supply chain performance.*

1. Introduction

Due to rising competition and globalization of markets after the 90s, providing the products and services at a reasonable rate, appropriate location, and within the optimum timeframe became challenging for the firms. The present marketing prerequisites conceptualize the business requirements by leveraging supply chain & logistics operations. Supply chains conceptualize the fabrication of planning, sourcing, manufacturing, delivery, and return logistics. The council of SCM professionals acknoledged that "supply chain architecture characterizes the phase of planning and organising operational processes in purchasing and sourcing transformation as well as all integrated logistics management activities in synchronization and collaborative learning with channel members, including stakeholders, vendors, middlemen, third-party network operators, and consumers."

The various authors elaborate on the potential of performance and quality adoptions among leading e-commerce corporations in multiple ways. Lin, Luo, Cai, Ma, & Rong (2016) examine how delivery quality affects customer experience and commitment in the e-retail logistics distribution chain by utilizing a triadic perspective of consumers. Yu, Wang, Zhong, and Huang (2017) focused on e-commerce operations will be improved by real-time & advanced technology. Asdecker (2018) explores the path that guides the delivery process of digitalization. Elgazzar (2019) explained conceptual foundation for a successful SCPM system. Seghezzi (2022) suggested the logistics-related SCOR model framework to discover the 9 primary logistical difficulties for retail chains. Meena (2022) concentrates on supplier selection and is least concerned with delivery, where operational efficiency, not procurement cost, is on the top 5 criteria. By analyzing

the viewpoints of different authors, the research states that none of the studies focuses on justifying the relationship between SCOR performance parameters impacting the performance of e-Commerce industries in India. The literature shows that the absence of an acceptable theoretical architecture and conceptual ambiguity in SCOR modules, which are crucial for impacting the performance of .com (commercial) industries, are cited as primary causes that have not been explored before. The study's findings also reflect the absence of a theoretical foundation for numerous empirical investigations. The previous studies cannot provide broad conclusions for practising the association across SCOR's performance parameters and how they affect the supply chain performance linking e-commerce industries.

This study empirically validates SCOR's performance measuring system in two ways. Initial execution has been performed to validate SCOR performance metrics concerning the Indian e-commerce industry. Second, we investigate the model's ability as a tool or mechanism to measure the SCOR performance parameters on overall SC performance. A theoretical model referring to the existing literature was formulated and empirically evaluated to achieve the objective with a survey of 70 e-commerce industries in India. The following two statements concentrate on the direction of our research:

RQ-1. The study focuses on extracting and evaluating SCOR-performance parameters for e-commerce industries in India.

RQ-2. Critically examining the influential impact of SCOR performance parameters on overall supply chain measures impacting performance linking e-commerce industries.

Assessment of the literature may fill the research gaps by providing the answers to these queries because tools are absent for evaluating SCOR performance systems. No previous studies employed empirical research to adapt the SCOR areas integrated with online commercial industries.

The composition of the research study is disseminated over 6 sections. The SLR-based modeling and hypothetical assumptions developed in Section 2 provide the background for the research on Indian e-commerce sectors. Section 3 conceptualizes the scientific research integrating the questionnaire design methodologies and statistical tools employed in the study. Section 4 examines the data collected during the fieldwork and reports the findings to evaluate the SCOR parameters connected with SC performance areas. The Hypothesis testing is summarised in Section 5. The

last section concludes the brief outcome of the results driving the SCOR indicators impacting the performance in the Indian e-commerce sector.

2. E-Commerce Sectoral View

The term "e-commerce," which also goes by the names "electronic commerce" and "internet commerce," describes the consumer's perceptions and reflects the shift in how goods and services are delivered in the digital age. The e-commerce rivalry has intensified because of online purchasing, notably among Amazon, eBay, BestBuy and Target. The four major prime categories of e-commerce platforms on every purchase made by customers from businesses may be segmented into "B2C," "B2B," "C2C," and "C2B" "business-to-consumer," "business-to-consumer," "consumer-to-consumer," and "consumer-to-business," respectively. Additionally, India intends to establish an (ONDC) "Open Network for Digital Commerce," allowing the e-commerce portals to display the goods, services, and solutions from every site by synchronizing the web-based search. Economists predict that due to the extensive usage of 4.0 technologies, the market may reach US$ 20 billion by 2025 and perhaps jump to US$ 70 billion by 2030. (Outlookindia.com).

3. Model Development

Business units use several procedures to create a finished product and services to improve the performance parameters. Industries were concentrating on designing SCOR integrated supply chain solutions consisting of planning, sourcing, manufacturing, distribution, and returns as a framework and methodological approach.

Bolstorff (2006) defines the metrics at Level 1 to conceptualize the SCM balanced scorecard categories based on the SCO-Supply Chain Operation, DCO-Design Chain Operations, and CCO Customer Chain Operations process, models. An empirical attempt was undertaken in the Indian E-Commerce industries to evaluate SCOR procedures in the business, influenced by the findings of a logistics & supply chain performance analysis. At Level 2 categorization, a total of 26 fundamental process categories can be included in a supply chain. The information provided at Level 3 is necessary for effective planning and establishing objectives for supply chain optimization and comprises the establishment of process elements, target performance metrics, and the attributes of system software to support best practices. The final level, i.e., Level 4, emphasizes

the supply chain changes into best practices. A few academicians have claimed that the models are built & evaluated focused on the industrial stratum of wealthy countries.

In contrast, the e-commerce sector in India is a chaotic mess due to the lack of excellent infrastructure and ill-designed mechanisms. Most companies do not have a well-defined plan and lack of vision to efficiently establish performance metrics for supply chain performance (Shepherd and Guenter, 2006). As a result, we have tried to prioritize the SCOR procedures for improving the performance at the ease of implementation among the Indian e-commerce firms for empirical analysis and an unparalleled view from developed economies. In doing so, we have aimed to improve the performance of e-commerce industries in India (Saen et. al., 2022).

Regarding our study, we include the metrics of Shepherd and Guenter (2006) proposed and classify them based on their application to the 5 processes (plan, source, make, deliver and return) of supply chains outlined by the SCOR model. The variables directly associated with reliability, agility, responsiveness, cost, and assets management has been considered in the study (Qing Lu et. al., 2016). The 'Plan' decision area refers to the provision of resource requirements, the accumulation and categorization of demand, the planning of inventory, and the transportation requirements of products. The 'Source' refers to the monitoring of procurement quality, vendor accreditation and feedback, and the receipt of materials under contracts with vendors. The 'Make' conceptualize the manufacturing, producing, testing, packing, storing, and releasing of products, "making" infrastructure, engineering improvements, facility and equipment maintenance, and short-term capabilities are all aspects of production and the execution of that process. The 'Delivery' concentrates on order management, which includes keeping and inputting orders, managing warehouses and deliveries, producing quotes, and customizing items. Create and maintain client databases, keep track of product and pricing databases, handle accounts payables and monitor credit. Transportation administration, traffic administration, and freight supervision are the mode of delivery, and the 'Return' is the return of a product through the reverse channel in case of any issue (Lockamy, and McCormack, 2004; Saen & Izadikhah, 2022).

Table I

Measured variables of SCOR areas have been identified as per the author's context as suggested by Rybinski, 2017, (based on a research-centric approach)

SCOR-PLAN MEASUREMENT		
S.No.	**Measured Variables**	**Authors References**
1.	Analyses the fluctuations in demand forecasting methods for a product as per client preferences	(Lockamy and McCormack, 2004; Makatsoris and Chang, 2004; Gunasekaran et. al., 2007; Fawcett et. al., 2012; Christopher, 2016; Rasool et. al., 2021)
2.	Operational strategy planning	
3.	Informational constraint planning	
4.	Overhead expenses planning	
5.	Logistics response time management	
6.	Time-to-order leads plannings	
7.	To place orders planning methods	
SCOR-SOURCE MEASUREMENT		
S.No.	**Measured Variables**	**Authors References**
1.	Documenting the procurement with the IT integration process	(Chen and Paulraj, 2004; Li et. al., 2005; Benton, 2011; Degroote et. al., 2013; Ganeshkumar et. al., 2014; Brown, 2015; Rasool et. al., 2021)
2.	Understanding/documenting the supplier ties evaluations	
3.	Designated procurement team per tasks evaluation	
4.	Real-time supplier plan/schedule for procurement/ requisition order	
5.	Strategically source products/services	
6.	Initiatives for reducing supplier costs	
7.	Supplier's capacity to address issues with quality	
SCOR-MAKE MEASUREMENT		
S.No.	**Measured Variables**	**Authors References**
1.	Integrate shop floor scheduling to meet business requirements per demand	(Chen and Paulraj, 2004)
2.	Cross-divisional integration with sales, manufacturing and distribution weekly scheduling	
3.	Suppliers frequently review on deliveries timelines per customer's specifications.	
4.	The ratio of inventory turnover optimization	
5.	Economic order size	
6.	Process cycle time anticipated	
7.	Flexible production methods	

Contd...

SCOR-DELIVER MEASUREMENT		
S.No.	**Measured Variables**	**Authors References**
1.	Process owner documenting the order commitment	(Chen and Paulraj, 2004; Li et. al., 2005; Benton, 2011; Degroote et. al., 2013; Ganeshkumar et. al., 2014; Brown, 2015; Rasool et. al., 2021)
2.	Track orders beyond inventory levels to compare client demands	
3.	Satisfied customers with a delivery schedule	
4.	Customer delivery promise as per the order commitment.	
5.	Understanding network interconnections	
6.	Distribution auto-replenishment	
7.	Delivery frequency, flexibility, and mobility anticipation	
SCOR-RETURN MEASUREMENT		
S.No.	**Measured Variables**	**Authors References**
1.	Response time for customers	(Chen and Paulraj, 2004; Li et. al., 2005; Benton, 2011; Degroote et. al., 2013; Ganeshkumar et. al., 2014; Brown, 2015; Rasool et. al., 2021)
2.	Amount of the product's perceived worth by customers	
3.	Complaints from clients	
4.	Complaint volume	
5.	Dissatisfaction response rate	
6.	Resolution cycle time for complaints	

3.1 *Supply Chains Performance Criteria*

Understanding the importance of the needs of end users, SCM strives to increase overall supply chain efficiencies, the final objective of operational strategies, when managing a supply chain, every professional has the challenge of striking a balance between several factors, such as price, output, output quality, shopper satisfaction and monetary gains, the evaluation of supply network's performance, nevertheless is an essential instrument for overseeing the conduct and direction of the distribution chain, to plan for the future of the supply chain, analyze the current SCP, and set its course of action, the efficiency of a supply chain is directly proportional to how accurately the SC's performance parameters impacting the performance, an organization's supply chain success, a performance indicator is to be seen as an empirically measurable numerical representation which defines how efficiently the supply chain procedures are carried out in terms of a comparison of both monetary and

non-monetary SCPIs, Gunasekaran et. al. (2007) conducting assessments of SCP at the operational, administrative and managerial levels.

Table II

Supply Chain Performance Indicators

Measures/ Variables	Explanations of Supply Chain Performance Indicators	Sources
Service Level	It measures the proportion of the order that can be fulfilled by the inventory on hand, considering both client orders and actual shipment activities, such as typical order processing time, focused order processing time consistency, on-time delivery, and accurate order taking.	(Thakkar et. al., 2009; Rasool et. al., 2021)
Asset Management	It focuses on infrastructure, technology, and working capital allocated in inventories. Capacity allocation and ITR-inventory turnover ratio relate to sales revenue to average unit inventories.	
Customer Accommodation	It tries to quantify flawless orders (an indicator of a company's dedication to zero-defect operations), extreme effectiveness, and customer happiness.	
Cash-to-Cash Cycle Time	Total time needed to turn an amount invested in inventories into sales income.	
Benchmarking	It encourages the management of modern business methods. Internal, competitor and unconstrained benchmarking are examples.	
Supply Chain Cost	The expenditures occurred throughout the supply chain. Fulfillment cost is expressed as a percentage of sales per unit of product sent.	
Agility Requirements	Modify or adapt the designs to fit client needs/ specifications.	
Warranty/ Returns Processing Cost	Covers the order processing, pack & pick expenses, and baggage carrying costs.	

3.2 *Hypotheses Formation*

The organisational environment should be compatible enough to meet the performance requirements. All 5 components of the SCOR model-planning, sourcing, manufacturing, delivering, and return must be aligned as per the company's requirement to have a good demand/supply balance (Rasool et. al., 2021).

3.2.1 Plan

Planning is an essential component and a prerequisite for the following three domains that make up the SCOR framework. For instance, demand prediction for all time scales, including long, medium, and short terms, when it comes to sourcing, manufacturing, and delivering and returning goods (Souza, 2014). The supply chain planning got enhanced with the use of demand data mapped throughout the planning process improves connectivity over the network (SCC, 2010). The activities include the planning process covers the aggregation and prioritization of demand expectations, fluctuations in demand prediction, product-based client preferences, product profitability examined by the team, documentation of the collective process, forecasting by using past data, making use of logical procedures, planned/committed actions, informational constraints, overhead expenses, intangible expenses, logistics response time, total cycle time, time-to-order leads the planning, responsiveness to customers, cashflow time, money-to-cash cycle, placing orders plannings methods, flexible ordering, etc., by following the conversation up above we hypothesize:

H1. Planning performance parameters positively impact the supply chain performance indicators.

3.2.2 Source

Sourcing involves choosing the appropriate suppliers based on an ideal trade-off referring to cost structures and lead time to satisfy the demand. Some recommended best practises include long-term relationships with vendors/suppliers, reliability, enhanced real-time information, and cooperation with vendors (Zhou et. al., 2011). Other research demonstrates the beneficial effects of credibility, real-time data exchange efficiency, documenting procurement, IT integrated processes, understanding/ documenting supplier ties, ownership incorporated, designated procurement team, regular team meetings, the team working

with other functions, sharing supplier plan/schedule, supplier performance evaluation, source strategy with suppliers, strategically source products/services, initiatives for reducing supplier costs, the booking processes of the supplier, cycle time for a procurement/requisition order, efficiency of procurement cycle time, level of the buyer-supplier partnership, rate of supplier exclusion, mutual commitment, information sharing engagement, compliance with the supplier connection, supplier participation resolving technical issues on time, reliable real-time information and the, supplier's capacity to address the problems with quality. Based on the above discussion, the hypothesis may be as under:

H2. Sourcing performance parameters positively impact the supply chain performance indicators.

3.2.3 Make

The make operation primarily involves transforming raw materials into final products. These advancements include lowering operational and inventory costs, shortening the lead time for manufacturing, cutting down on production wastage, and raising quality. These include TQM, JITs, lean and agile industrial production, push-pull manufacturing, flexible network scheduling, integrated shop floor scheduling, cross-divisional coordination, cycles of weekly scheduling, constraint-based planning, IT integrated business operation executions, deliveries timelines, customer's schedule, and specifications, integration in Sales-Manufacturing-Distribution, process owner, conformity plan, volume adaptability, etc., which have all been created in the recent few decades. Therefore, we tested the hypothesis statement:

H3. Make performance parameters positively impact the supply chain performance indicators.

3.2.4 Deliver

The SCOR model's delivery process addresses and assesses the subsequent segment. Logistics is essential to the supply chain planning process since it connects the supplier-to-consumer (S-C) (Gunasekaran and Kobu, 2007). Delivery logistics make it easier for products to move physically from a supply network (manufacturer/stakeholder/supplier) to a demand network (market/consumer). According to the findings of many segments of research, an organization's ability to effectively manage

its logistics may possess a business with a core competency (Christopher, 2016). The functions are order commitment, promise process owner, track orders, inventory levels, flexibility, mobility flexibility, etc. Considering the explanation above, the proposed hypotheses may be:

H4. Deliver performance parameters that positively impact the supply chain performance indicators.

3.2.5 Return

The SCOR framework incorporates the return procedure starting with the newer variant. Return damaged goods, surplus goods, and interests that need servicing, restoration, repair, refurbishment, or maintenance are conceptualized under the return mechanism. (Palma-Mendoza et. al., 2014). To execute with studies, the proposed hypothesized context may be:

H5. Return performance parameters positively impact the supply chain performance indicators.

H6. The moderation impact of the size of employees significantly impacts the supply chain performance.

4. Research-Methodology

4.1 *Questionnaire Designing*

Several iterations of the SCOR methodology were utilized, in addition to numerous meetings and interactions with academic professionals and executives of supply chains. The research questions are organized into the following sections: (07 items) plan, (07) source, (07) make, (07) deliver and (07) return (06).

4.2 *Sample size and data collection*

For analysis, the top 70 online e-commerce companies were approached in India for sample contributions from at least 500 respondents with a response rate of 253 out of 500 respondents. Their position or title probably allowed them to learn a lot about the intellectual workings of their company. The observations from the selected datasets were obtained using nominal and interval scales. Demographic information was collected from respondents using a scale.

4.3 *Data analysis*

Analysis shows that 40% of the survey participants worked for B2C companies, 25% for B2B, C2B holds 21%, and 14% referred C2C. In India alone, there are 19,500 online retailers. By considering the magnitude of the e-Commerce firms, the scope of their offerings, the depth of their resourses, and the volume of their monthly visitors. All of those are the best online marketplaces in India. The profile of respondents includes Vice President operations-04 %, Assistant Director supply chains-03%, General manager operations-26%, Assistant general manager retails-14%, Operations Manager-14%, Logistics Consultant-25%, and Practitioner-SCM 14 %. Employee size between 1-50 is 45%, and 51-100 is 55%. Employee size in the operations area is between 1-50 are of 45% and 51-100 55%.

4.3.1 Test of reliability

The instrument's resilience was analyzed by observing Cronbach's α (1951) value as a measurement of internal consistency on 'S-C-O-R' integrated performance excellence such as planning, sourcing, manufacturing, delivery and return processes. Cronbach's checks the reliability of a set of items by analyzing their correlations to see whether they measure the same set of constructs. Cicchetti and Sparrow (1990) conceptualize the established standard guidelines for measuring reliability

Table III

N=253. Mean, and SD values of constructs were evaluated to analyze a mechanism of the Likert rating scale on seven points from a Strongly-Disagree range to a Strongly-Agree range of 1 to 7. Cronbach's α used to analyze the item's internal consistency reveals the value of .91. Testing the model fit of the CFA value =χ2= 6082.537, d.f. =561, $p < 0.000$. Every factor loading is statistically significant, i.e., ($p<0.05$) at a 5% significance level).

Constructs	No	Loadings	Items	CA	AVE	CR	**Source**
PLAN	1	0.780	PLN1	.913	.547	.893	
	2	0.772	PLN2				
	3	0.796	PLN3				
	4	0.782	PLN4				(Kottala & Herbert, 2019)
	5	0.730	PLN5				
	6	0.754	PLN6				
	7	0.791	PLN7				

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SOURCE	8	0.789	SRC1	.912	.634	.923	
	9	0.770	SRC2				
	10	0.850	SRC3				
	11	0.817	SRC4				(Kottala & Herbert, 2019)
	12	0.706	SRC5				
	13	0.848	SRC6				
	14	0.807	SRC7				
MAKE	15	0.785	MKE1	.911	.586	.908	
	16	0.703	MKE2				
	17	0.817	MKE3				
	18	0.797	MKE4				(Kottala & Herbert, 2019)
	19	0.689	MKE5				
	20	0.793	MKE6				
	21	0.801	MKE7				
DELIVERY	22	0.619	DLVR1	.910	.610	.915	
	23	0.753	DLVR2				
	24	0.774	DLVR3				
	25	0.804	DLVR4				(Kottala & Herbert, 2019)
	26	0.797	DLVR5				
	27	0.794	DLVR6				
	28	0.790	DLVR7				
RETURN	29	0.762	RTRN1	.911	.665	.922	
	30	0.832	RTRN2				
	31	0.818	RTRN3				(Kottala & Herbert, 2019)
	32	0.850	RTRN4				
	33	0.856	RTRN5				
	34	0.817	RTRN6				

where $\alpha \geq 0.9$ is excellent justifies as a rule of thumb. The findings demonstrate that the α's range is 0.91, which is adequate according to the standards for the execution of the model. The suggested 34 performance metrics referring to SCOR methodologies (i.e., Plan, Source, Make, Deliver and Return) have a reliable consistency on the measuring items to proceed further. Measurements of reliability outcomes and statistical description integrated into SCOR performance metrics PLAN, SOURCE, MAKE, DELIVER, RETURN.

4.3.2 Test of validity

The validity of both 'Convergence and Discriminant' is under consideration. As a component of the test of measurements and to evaluate the convergent validity, we looked at some of the metrics, Factor Loading, AVE, and CR value Hair et. al., (1998). Table III displays all the values of loading statistics, demonstrating the considerable correlations between the items and the respective variables. Additionally, the AVE, i.e., AVE ≥ 0.50 and CR values, are relatively higher than the threshold of 0.70 (CR ≥ 0.70). The average variance explained is the key indication of convergence, and a reliability coefficient value above 0.70 demonstrates the tolerance of the latent variable under investigation (Hair et. al., 2010). In proving discriminant validity, return holds the weight of .815, plan-.740, source-.796, make-.766, delivery-.781, and performance-.728, i.e., there are no validity concerns in the outcome.

Churchill (1979) and Hair (2010) squared the estimated relationship between the variables of interest. The squared inter-construct correlation estimation must be less than the AVE estimations (shared variance). Interpretation along these lines is predicated on the assumption that the latent variable should account for more variation in its item measurements than it shares with any other latent construct. The test has confirmed discriminant validity for the path model constructs. So, statistically, all latent constructs were validated discriminately. The content and reliability of the constructs of the SCOR procedure were established by analyzing the CFA loadings. The accuracy of a survey's questions is known as its construct validation. To assess the global concept validity using structural equation modeling, a CFA was performed in SPSS. Three indicators of goodness of fit, including the chi-square statistic's 2/d.f. Ratio, the comparative fit index (CFI) value of at least 0.90, and the root-mean-squared error of approximation (RMSEA) of less than 0.08 are used to determine whether the SEM adequately describes the data. The final CFA result is shown in Table III. To presume the accuracy of the proposed scale, we conducted a Confirmatory Factor analysis using SEM and AMOS 24.0. As Brown (2015) indicated, during subsequent statistical analysis, factor loading of items, less than 0.4 was excluded from the study. The outcome of the goodness of fit indices is CFI-.913, NFI-.90, GFI-.87, RMSEA-.055 and CMIN/DF-1.772. An appropriate fit is shown when the model's estimated SRMS falls between the 0.05 to 0.08 range Garson (2011).

5. Results

Findings for the five hypotheses tested in the SEM modules are displayed in Table IV. The t-values in the table indicate that four of the five hypotheses are accepted with a p-value of 0.05 level of significance or below, while one hypothesis is not accepted since its p-value is greater than 0.05, considered non-significant at the value of 0.54; hence it was rejected. Thus, except for the source, the plan, make, deliver, and return areas positively impact supply chain performance comprehensively: service level, customer accommodation, asset Management, cash-to-cash cycle time, Cost, benchmarking based flexibility on requirements, and warranty/returns processing cost. The current research aims to investigate the variations in the four specified categories of the Indian e-commerce sector: B2C, B2B, C2C and C2B. Various SCOR procedures are integral to these supply chain logistics operations, and these activities are closely connected to SCPI (Note: the -p value must be < 0.05).

Table IV

Acceptance/ rejection of hypothesis based on the outcome

Path SEM	Estimate/Path Coefficient	t-Value	P	Outcome
Plan – Performance	.135	2.736	0.006	Accepted
Source – Performance	.032	0.612	0.54	**Rejected**
Make – Performance	.248	4.486	***	Accepted
Deliver – Performance	.309	5.180	***	Accepted
Return – Performance	.427	7.342	***	Accepted

From Table V, Model 1 (without interaction term) is significant as F(2, 250) = 142.155, p<.000, and Model 2 (with interaction term) is substantial as F(1, 249) = 8.693, p<.003; thus, the Model 2 interaction among the number of employees and the SCOR performance metrics accounted for a larger share of the total variation than employee size SCOR performance indicators level by themselves, R^2 change = .016, p = 0.003, indicating potentially significant moderation between employee size and SCOR performance indicators on OSCPI.

Table V

Moderation effect of employee size between SCOR performance parameters and SC's performance indicators

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.729[a]	.532	.528	.68675827	.532	142.155	2	250	.000
2	.740[b]	.548	.542	.67642952	.016	8.693	1	249	.003
a. Predictors: (Constant), Zscore(EmpSze), Zscore(SCORAVG)									
b. Predictors: (Constant), Zscore(EmpSze), Zscore(SCORAVG), Interaction									

6. Discussion

Similar empirical studies by Zhou (2011) support the results of the current work. Gawankar (2016) empirically measured the performance is useful solely in revealing the supply chain's present deficiencies. The most widely used framework, which was not created for performance monitoring but rather for the standardized categorization of SC's activities, is the Supply-Chains Council (2013) SCOR supply-chain management. The methodology recommends gauging results in five critical areas of the SCM: planning, sourcing, manufacturing, distribution, and return services. Researchers have presented several other paradigms. (Gunasekaran et. al., 2007) but was not widely used in actual practice.

6.1 *Practical Implications*

The results guide SCM professionals working in the Indian online commercial industry, specifically, the suggested SCOR integrated model (procedures that need to be prioritized to have an excellent SCP measuring system). Thus, our models would enhance firm performance, increasing business expansion and earnings. As a result, the findings of our study provided support for e-commerce businesses that primarily concentrate on reliability, customer alignment, and supplier interoperability, with the exchange of information being one of the most important criteria in retail chains. Best practises are indicated by the results, which show that under the planning process to analyze the variations in demand forecasting methods for a product based on customer preferences, operational strategy development, informational requirement planning, automatic

expenses planning, logistics reliability management, time-to-order causes, and placing demand/planning methodologies are the significant characteristics that justify the process. Since the source has not substantially influenced the performance, it may be left out of the result. Delivery may include summarizing order confirmation, comparing customer orders and inventory levels, delivery-satisfied customers, credible orders/delivery promise helpdesk, connecting networks, auto-replenishment, reliability, flexibility, and versatility. Finally, customer reaction, customer-perceived product value, complainants, complaints volumes, unsatisfied rate, and grievance redress time may be addressed to enhance the brand's reputation among consumers.

6.2 *Theoretical Contributions*

Our research has uncovered and incorporated a unique supply chain optimization monitoring system technique using the suggested SCOR-based methods. Our study showed that companies need to be connected to get insight into their SC collaborator operations using the recommended SCOR-based procedures as a model, which we found by assessing the SCP employing the proposed elements to comprehend the perceived capabilities of these processes. Supported by the efforts of Ramish and Aslam (2016).

7. Conclusion

The article's findings may have several complexities for SCM professionals regarding knowing the optimal practices linked with SCOR procedures. First, the literature review agrees with our study's conclusion that SCOR procedures are essential to enhancing supply chain logistics planning. Efficiency, customer happiness, and supplier reliability were all found to be intrinsic to the SCOR process planning, sourcing, construction, distribution and returning processes. To conclude, our analysis and findings concerning the research objective comprehend the significant impact that SCOR performance measures and supply chain performance have on the Indian e-commerce market have achieved. Second, the observations of our research deliver empirical support for previous research suggesting that the performance indicator of supply chains must be recognized as the recommended composite model that professionals in the Indian e-commerce industry may consider the important measure of supply chains. These findings indicate that supply chain performance indicators

intend to be used as a dimension of supply chains. Our research presents this empirical evidence. Nevertheless, there are several restrictions to the study, the scope of the research was restricted to online e-commerce retail companies, and the applicability of these findings to service businesses is so limited that only a small number of the e-commerce industries took part in the questionnaire survey.

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