RELATIONSHIP ANALYSIS BETWEEN SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICES AND ORGANIZATION'S FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY ON INDIAN STEEL SECTOR

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Abstract:
Because competition is now between supplier networks rather than individual companies, effective supply chain management (SCM) has emerged as a potentially significant technique for preserving and enhancing an organization's financial success. This study examines the relationships between SSCM practices and organisational financial performance by conceptualising and constructing six aspects of SCM practices (supplier relationship, internal operation, efficient information flow, adoption of latest technology, customer relationship, and service quality). The relationships in the framework that were derived from 204 respondents from the steel industry were examined using correlation, regression analysis, and ANOVA. The results show that SSCM practices at higher levels can help organisations perform financially better. Additionally, the financial performance can be directly and favourably impacted by sustainable supply chain management.
Keywords: Supply chain, Steel sector, sustainable supply chain and financial performance

Introduction
India's steel industry must grow if the nation is to advance economically. Utilisation of steel is seen to be a reliable indication of economic expansion. While steel is still widely utilised in traditional industries like construction, housing, and ground transportation, special steels are increasingly used in manufacturing sectors including electricity production, petrochemicals, and fertilisers. India's concern for new cutting-edge steel mills, the achievement of global range capacities by players, the ongoing transformation and modification of older plants, improving energy competence, and backward integration into global raw material sources have helped India achieve a middle position on the world steel map.

Global Scenario of Steel Industry
• Global crude steel production increased by 3% to 1869 million tonnes (MT) in CY 2019, compared to CY 2018.

• According to World Steel Association statistics, China continued to be the world's top crude steel manufacturer in 2019 (996 MT), followed by India (111 MT), Japan (99 MT), and the United States (88 MT).

• In 2019, the world's per capita refined steel utilization was 229.3 kg, while China's was 663 kg. In 2019, India's weight was 74.3 kg. In India, per capita expenditure of total refined steel was 74.7 kg in 2019-20.

Literature Review

Before providing theoretical discussions on the research phenomenon, we will briefly present background on the concept of SCM, which is used in this study as the research foundation towards adopting the concept of SSCM. The field of SCM is an integrated and interdisciplinary topic that has continuously evolved to become a discipline in its title instead of pure descriptive studies (Carter and Ellram, 2003; Storey et al., 2006).

According to Slack et al. (2010), "supply chain management is a logistic channel that provides the most efficient ways of collecting information, products, and services from manufacturers or suppliers to end-customers". It entails operations within organizations that are either directly or indirectly linked in order to serve end-customers with products and services (Harrison, 2001). There are several definitions of SCM in the literature, but this thesis uses Handfield and Nichols' definition, which is the most widely used and quoted (1999, p. 2).

"Supply chain management may be a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, in order that merchandise is produced and distributed at the proper quantities, to the right locations, and at the proper time, so as to attenuate system wide costs while satisfying service level requirements."

"SCM is defined as the simultaneous administration and coordination of a complex network of processes aimed at providing products or services to end users in the most efficient and cost-effective manner feasible" (Storey et al., 2006). "The sourcing and inventorying of raw materials and parts, work in progress, manufacturing and product assembly, order entry and tracking, transportation and distribution, and eventually delivery of finished items to end-users are all activities that are involved"(Handfield and Nichols, 1999; Lambert and Cooper, 2001).

Research Objectives:

In general, as per aim and the study's research questions, the following objectives are as follows:-

1) To decipher the relationship & impact of SSCM on Organization's financial Performances.
2) To find out areas, where new corporate strategies are to be formulated for sustainability of steel companies.

Significance of Research:

The enclosure of driving forces associated with SSCM adoption in this study contributes significantly to ongoing research that links sustainable supply chain management techniques

to performance outcomes, resulting in more trustworthy conclusions and bridging the gaps in existing information. This is also one of the few empirical studies to show a link between performance results, which has hitherto been missed in research.

Research Design

The collection of data, measurement, data analysis, and drawing of conclusions are all included in research design. The study is an exploratory one with a focus on idea discovery that is based on a field survey. The primary and secondary data were acquired using well-structured questionnaires from the iron and steel organisations. These specialists in supply chain management include directors, senior logistic managers, senior logistic team members, and the head of the supply chain management system and the chief of the logistic management system. The study is exploratory in nature and the hypothesis was established.

Sampling Design

Non- probability convenience sampling method was adopted for selection of respondents. The study has chosen multiple stakeholders to derive a holistic approach. The sample size was 204 from steel organization which are operating in India.

Tools and techniques used for Data Analysis

SPSS was used in analysis of survey data. Correlation, multi-linear regression analysis, ANOVA, t-test are the statistical analysis used in predicting the intent to explain the impact of sustainable supply chain management on organizational performance in Indian steel industry.

Research Hypotheses

H1: Effective internal operations and reporting system is having positive impact on overall financial performance of organizations in steel industry of India.

Data Analysis and Interpretation

The major objective of this study is to analyze the collected data from primary sources in order to ensure the achievement of research objectives by testing of hypotheses through the use of computer software, Statistical Package of Social Science. Total 229 respondents filled the questionnaire and valid respondents were 204 after elimination of invalid responses, yielding response rate of 89%.

Regression Analysis between Dependent Variable(Financial Performance) and Independent Variables:

Table-1: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.903[a]	.815	.808	.29355	1.656

a. Predictors: (Constant), SIPR_avg, EIO_avg, LLSR_avg, ALT_avg, SQ_avg, CRM_avg, EIFR_avg, CA_avg

b. Dependent Variable: FP_avg

Note: LLSR = Long Lasting Supplier Relation

EIO = Effective Internal Operation

EIFR = Efficient Information Flow and Reporting System
ALT = Adaption of latest technology
CRM = Customer Relationship Management
SQ = Service Quality
CA = Competitive Advantage
SIPR = Social Image and Public Recognition

Table-2: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.263	8	9.283	107.722	.000[a]
	Residual	16.804	195	.086		
	Total	91.067	203			

a. Predictors: (Constant), SIPR_avg, EIO_avg, LLSR_avg, ALT_avg, SQ_avg, CRM_avg, EIFR_avg, CA_avg

b. Dependent Variable: FP_avg

As per above mentioned table:----- the regression analysis between dependent variable(FP) and eight independent variable(LLSR, EIO, EIFR, ALT, CRM, SQ, CA and SIPR)taken together were 0.903. It indicate that the financial performance(OP) is highly affected by all eight independent variables. The value of r^2 is 0.815, it indicate that 81.5% of the variation in Dependent variable(FP) is due to jointly influenced by eight independent variables at 5% level of significance. In the above mentioned table-----, the p value is less than 0.05, hence model is deemed to be fit.

Table 3: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.426	.143		2.980	.003
	LLSR_avg	.226	.045	.275	4.997	.000
	EIO_avg	-.258	.064	-.295	-4.059	.000
	EIFR_avg	.179	.103	.180	1.733	.085
	ALT_avg	-.349	.072	-.357	-4.863	.000
	CRM_avg	.384	.078	.423	4.948	.000
	SQ_avg	.491	.100	.479	4.916	.000
	CA_avg	-.264	.115	-.256	-2.293	.023
	SIPR_avg	.592	.090	.478	6.585	.000

a. Dependent Variable: FP_avg

Note: LLSR = Long Lasting Supplier Relation
 EIO = Effective Internal Operation
 EIFR = Efficient Information Flow and Reporting System
 ALT = Adaption of latest technology
CRM = Customer Relationship Management
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With the help of above mentioned table----, the multiple regression equation is:-
Financial Performance(Y) = 0.428 +0.226(Long Lasting Supplier Relation) + (-0.258 Effective Internal Operation) + 0.179(Efficient Information Flow and Reporting System) + (-0.349 Adaption of latest technology) + 0.384(Customer Relationship Management)+ 0.491(Service Quality)+(-0.264 Competitive Advantage)+ 0.592(Social Image and Public Recognition)
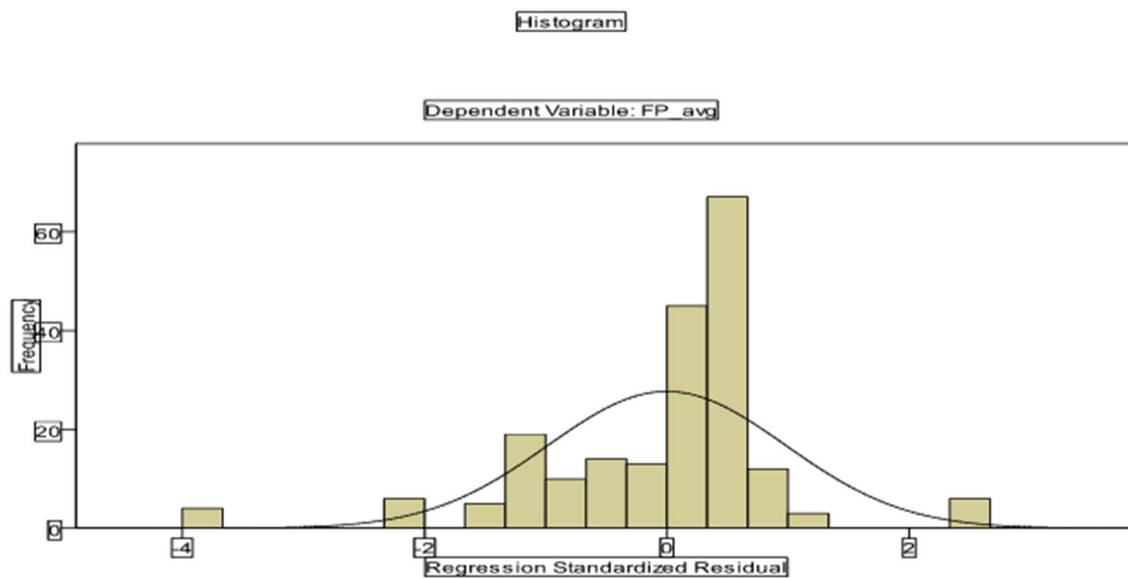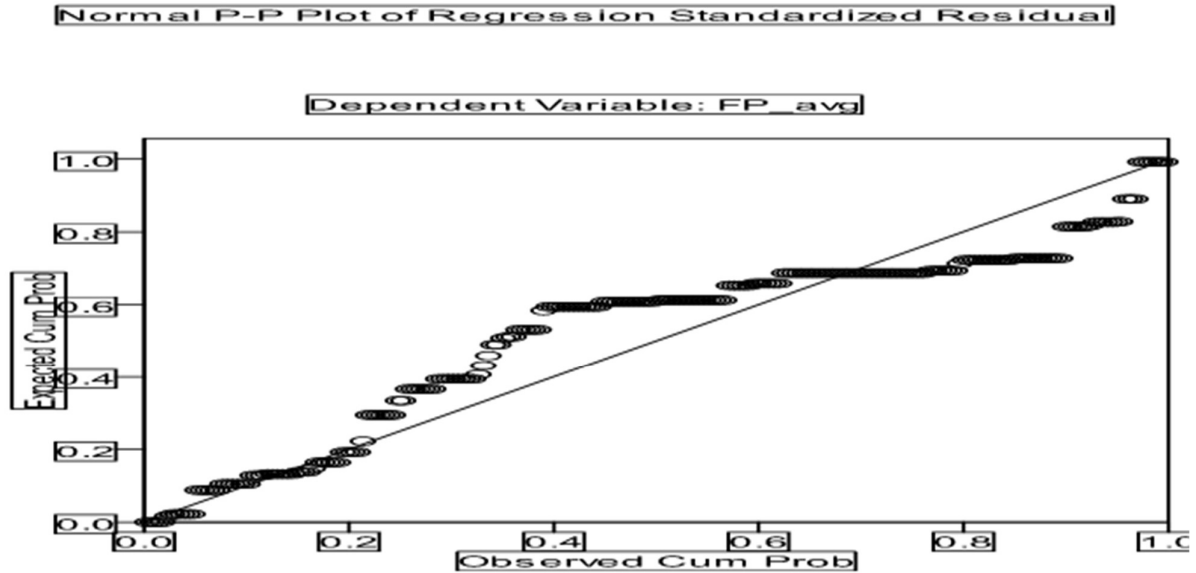
Figure-1:

Figure-2:

Effective internal operations and reporting system is having positive impact on overall financial performance(H1):

Table ------ exhibit, the constructs of effective internal operation and reporting system are anticipated to have similar significantly positive impacts on financial performance in the context Indian iron and steel sector

Table-4: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
FP_avg * EIO_avg	Between Groups (Combined)	62.794	10	6.279	42.864	.000
	Within Groups	28.273	193	.146		
	Total	91.067	203			

Note: FP = Financial Performance, EIO =Effective Internal Operation
Level of Significance = 5%

Table-5: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
FP_avg * EIFR_avg	Between Groups (Combined)	67.416	10	6.742	55.015	.000
	Within Groups	23.651	193	.123		
	Total	91.067	203			

Note: FP = Financial Performance, EIFR = Efficient Information Flow and Reporting
System
Level of Significance = 5%

Summary of Findings and Conclusion:
As a result, we feel that the suggested SSCM drivers-practices-performance model captures the theoretical linkages among the theorized dimensions while also reflecting the study's key research clusters, including driving forces, SSCM practices, and financial performance results. The empirical findings of this research investigation show that the organization's operational performance together with financial commitment and support on implementing SSCM practices including supplier relation, internal operation, efficient information flow, latest technology, CRM, service quality, competitive advantage and social image of Indian steel sector. This study shows directly impacts all of these SSCM practices and impact firms' financial performances through the SSCM practices.
Although the hypothesised model predicted that the overall impact of the supplier connection and exceptional customer relationship construct reduced, this construct was still anticipated to have a substantial impact on the operational performance of the business. Effective internal operations and reporting systems are predicted to have similar favourable financial effects on the Indian iron and steel industry. Changes in technology along with service quality have had a favourable influence on the financial success of steel firms in India.

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