Industrial Revolution 4.0- Its Impact On Business Dicision Making Models In Supply Chain Management - A Study.

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ABSTRACT:

The Industrial world is on the Brink of its 4th Revolution of Industry 4.0. Industry 4.0 is ushering the next revolution, where both human and machine talent can be brought together on frictionless platforms, to create new Business Models especially in supply chain sector and unlock new frontiers of efficiency. Huge supply chains are involved in the journey of any product takes from inception, to manufacture and then operation. The 4.0 Industrial Revolution is characterized by the convergence of breakthrough Technologies, such as Robotics, Artificial Intelligence, The Internet of Things, Virtual and augmented reality, wearable's that are transforming productions processes and Business models across different Industries. The objective of this paper is to analyze the Decision making planning being done in this area of Research and provide future insights on how to design proper planning which will reflect the real life scenario.

Key words: *Industry 4.0, transforming production processes, Business models etc.,*

INTRODUCTION:

The field of Supply Chain Management has seen rapid advances in recent years with the Advanced Application of the Techniques of Industrial Revolution 4.0. Business Organizations need to adopt supply chain process and resources to bring products and services to the market faster, at the lowest possible cost. Companies have understood that for competing in continuously changing environment of Industrial revolution impacts 4.0is necessary to focus on supply chain business performance operations of the 21 st century. Effective supply chain management associates with a variety of advantages including increased customers value, increased profit ability, reducing cost etc., The Effective supply chain structured and formulated will enhance the Organizational commitments which contributes the Decision making process, particularly in redesigning Business goals and strategies and re-engineering processes.

A GENERAL MODEL OF SUPPLY CHAIN MANAGEMENT IN 21 ST CENTURY.
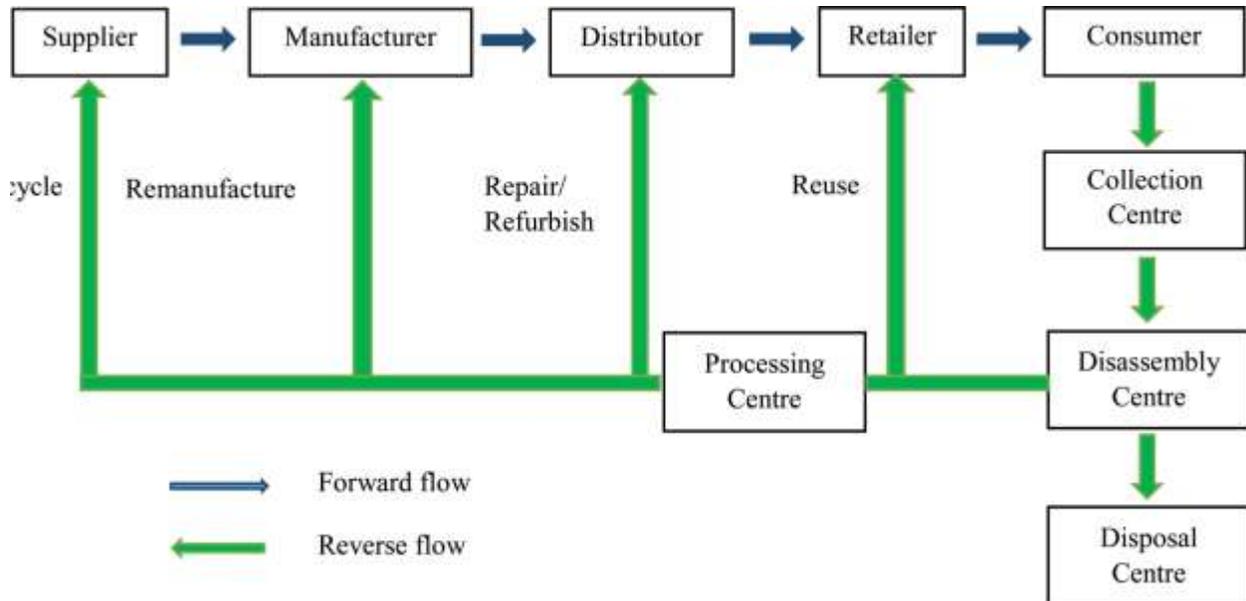
OBJECTIVES OF THE STUDY:

1. To explore the suitable models designed for the successive management of the supply chain management system.
2. Designing the model to meet the customers demand and satisfactions in a timely manner as efficiently and profitably.
3. Improve the responsiveness and increase the flexibility in a changing and competitive environment.
4. Principle that combine social responsibility with environmental factor to achieve a high value profit.
5. To design of prescriptive artifacts that describes relationships in Supply chain management.
6. To offer targeted and evaluated decision support functionalities for sustainable chains,
7. To provide fertile ground for future research Enquiries.

LITERATURE REVIEW:

Ahire, S.L. Golhar, D.Y and Waller M.A. (1996) discussed the past decade has seen in response to the growth in service Industries, increasingly interest in termed as "Science and Innovation" Armstrong J.S. and Overton T.S.(1977) ANALYSED THE Embryonic field promoted by far in sighted Enterprises, Government Agencies and academics and the basic promise is given to services and Innovation, designed to Add value through maintaining supply chain management, sustainable growth is depended upon identifying, supporting and nurturing meaningful services exchanges that exploit develop and embody value added knowledge transfer with in and across Industry.

Garratt.M and Oke A (2007) Integrating new supply chain technology can power up existing operations, stream less inventory and increase in revenue, if implemented properly.

Byne, B.M. (1998) Making sure new solutions integrate with existing technologies and processes can help significantly increase customers service, reduce costs, and streamline supply chains.

Carter, C.R. and Easton, P.L. (2011) The New Technology must be fully synthesized with the existing policies, practices and people, however to tap its full power.

DECISION MAKING PROCESS IN THE LOGISTICS SUPPLY CHAIN ORGANIZATIONS:

Organizations are feasible enough to take decisions regarding of supply chain management which determines the efficiency of the organization. A rational decision begins with defining the problem and to identify the decision making criterions to solve the problem.

FOURTH INDUSTRIAL REVOLUTION TECHNOLOGIES:

A vast range of the technologies are showing impact on supply chain management. These Technologies open up new opportunities for creating value across multiple dimensions for the Individual, society and Industries. The supply chains are driven by operating new Technologies.

THE INTERNET OF THINGS: It is a virtual inter connection of Intelligent Assets, and devices to achieve improved user experience and usability. The supply chain management is subjected to apply across all business firms and organizations.

ARTIFECIAL INTELLIGENCE: It is a self learning system for machines that replicate the cognitive abilities of Human beings. A1 particularly machine learning is one of the most important for general purpose Technologies. A1 can significantly help to improve performance without human Intervention. The supply chain is driven by operating new Technologies.

TECHNOLOGICAL IMPACT ON SUPPLY CHAINS- A STUDY.

The Industrial revolution changes pas the way to create the value to the chains. Digitalization opens up new vistas and new form of collaboration at various stages of value chain.

TECHNOLOGICAL IMPACT ON LOGISTICS.- A STUDY.

The Industrial Revolution 4.,0 also shows impacts on Logistics sector. Innovative Business models in the field of supply chain management can result represents a change in the Logistics. The new Business models devised might be used for making the logistics intensively use of Data. Today 44% of the companies still focus on traditional Business Models and 37% of the Logistics providers have already adopting new part of their business Models. Decisions need to be made to expand existing Business models to shape new Business models.

CONSIDERATIONS FOR INDUSTRIAL REVOLUTION 4.0- DEGITAL SUPPLY CHAINS

With the Introduction. of Industrial Revolution 4.0 the roles of the stakeholder's changes where companies need to prepare for this development. In the Fourth Industrial Revolution, Technologies and data collection are not being considered to the fullest extent possible. To transform supply chains a new level of supply chain visibility should be done.

Exhibit 4
Effect of push technologies and pull demand on the digital supply chain
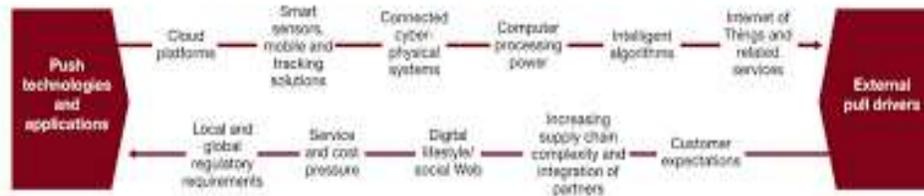
ANALYSIS OF DECISION MAKING MODELS IN SUPPLY CHAIN MANAGEMENT.

In this paper we focus on various current models to get optimized proper results. Consideration of several aspects to meet the challenging problems of the current period aroused in supply chain management to overcome the competition levels. The Development of several models is one of the big challenging tasks of the Researchers in current scenario. These models development must be implemented with the help of application of soft ware approaches, like Cloud Computing, MATLAB Technology programming etc., to obtain the accurate results. In this current scenario the Traditional methods are thrown off and at present Buyer and Supplier Relationship are developed so far with the introduction of Innovative Products.

According to Cooper (1987), if businesses are to survive and prosper, managers must become more astute at selected as new product winners, and at effectively managing the new product processes, from product Idea through to Launch. In this context of preparation of models of decision making first we consider the market share of the producer designed to frame out the structure for decisions. Probability Estimates, Application of A1 methods, Logistic Regression Analysis are the tools analyzed in representing the models. The benefits accrued between the supplier and Buyers must be maximized by getting the logistics cost reduced. Designing models can be developed by using the latest Technological methods of supply chain management.

INTEGRATIVE DECISION MAKING : In this Paper the various Business Decision models are explored to solve the problems of supply chain management. We focus our attention on the models specifying on Innovative methods competition levels between the Buyer and supplier. The Model provides a deep analysis about the Innovation of the products by firms to manage investments and highlights the significance of coordinated efforts like Marketing, Research and Development for successful Development.

DECISION SUPPORT TECHENIQUE FOR SUPPLY CHAIN MANAGEMENT

In the present scenario, the method of Architecture is basically proposed with a combination of the Simulation and Optimization Techniques are used widely. The optimization module is based on Algorithms and simulation model uses effective alternate designing proposed by the strategic and tactic decisions to find global optimal solution using the optimal scheduling solution proposed by the genetic algorithms for the operational decisions. The perspective is therefore to devise an optimal logistic production plan, to minimize the total cost, which is the sum of procurement processing, storage, distribution costs with a view to achieve the predetermined goals.

DELPHI MECHANISMS OF EXPLORATION:

In this paper we have build a insight offered, by seminal models and leverages of Delphi mechanisms of exploration and controlled feedback in order to design, refine and validate decision models. The Delphi facilitated the Identification and assessment of vital relationships and influential factors for sustainable supply chain management.

THE DES MODELS;

The another model developed as LP Model to minimize the Annual cost of the supply chain process. LP Model is formulated in a dynamic and stochastic Discrete Event Simulation Model (DES) model of Supply chain management.
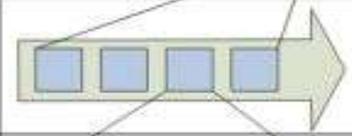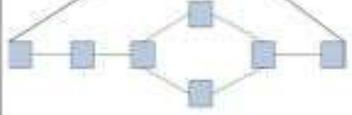
LINEAR PROGRAMING MODEL:

The Model is validated and solved using GMS software. Sensitivity model on the proposed model is conducted in order to draw useful conclusions in the efficiency of the supply chain management.

SCOR MODEL : SCOR model is just an Abstract representation of the life cycle of SC, from the designed step. The SCOR model thus provides a kind of Instantiation mechanism of the systems that are involved in the overall Sc through the proposed SCOR Paradigm remains the vertical. In SCOR model performance assessment helps decision makers to manage the SC and explain th achieved results.

SCOR provides a standardized, comparable and assessable reference model for logistics. Within the bounds of this model the supply chain is defined and best-practices are analyzed in order to draw conclusions from this for your own supply chain. Thus the SCOR model is an approach to standardize process chains across the border of different enterprise. Thereby a common understanding of the workflows can be achieved as well as an assessment of the supply chain based   on   key   figures.

The SCOR model is a hierarchical model that consists of four levels. Its starting point is an integrated supply chain that covers all interactions with customers from incoming order to incoming payments and all material flow, the production processes as well as all interactions with the market from resource delivery from our supplier to the delivery to the customer.

Level	Description	Diagram	Dimension	Application	Classes
1	Process		Entire Supply Chain	Determination of the coverage	•Planning •Execution
2	Process category		Entire Supply Chain	Configuration	•Planning •Execution •Infrastructur
3	Process element		One diagram per process category	Process design	•Planning •Execution •Infrastructur
4	Implementation		One diagram per process category	Detailed Process design	•Planning •Execution •Infrastuctur

AHP APPROACH:

In Decision making approaches the tools used to solve the problems of performance metrics trade-off by weighing the importance of different KPI,s. Among them AHP (Analytic Hierarchy process) approach, a quantitative decision making tool for linking scorecard to overall mission, objectives and strategies. It is argued that AHP is not stable in its Theoretical foundation due to the revisions of evaluations of Decision makers' preferences.

INTRICATE PERFORMANCE MEASURES:

Many metrics used in Supply chain performance Evaluation have been designed to measure operational performance, evaluate improved effectiveness and examine strategic alignment of the Supply chain management.

KPI ANALYSIS METHODOLOGY:

To develop the supply chain methodology, a methodology of analyzing Iterative KPI accomplishments. This methodology applies in setting goals, model and plan. The framework consists of steps.1.managers identify and define KPI's and their relations.

RESEARCH METHODOLOGY:

keeping the above objectives in mind, a sample of 60 Logistics service centers was selected for study. The design of the study was exploratory and the data was collected from primary and secondary sources. Primary Data was collected through personal Interview schedules, while secondary data was collected from Logistics journals, government Bulletins, Internet and websites.

To find out the problems faced by the Logistics sector organizers, simple percentage analysis was administered; Percentage and Rank analysis was also used to find out the demographic profile of the Logistics sector Organizers to draw inferences.

Brief Profile of Guntur District: The Guntur District is an Administrative District of Andhra Pradesh. The District Head quarter is located at Amravati. As if 2017, it is the Third most populous district (out of 13) of Andhra Pradesh.

According to the 2010 census, Guntur District has a population of 6, 19, 25, 975. The District has a Population density of 365 inhabitants per square Kilometer. Its Population growth rate over the Decade 2007-17 was 15.67%. There are 7,876 Villages in the District with a Rural population of 4,10,54,835. Agriculture is the prime occupation of the people of the District. The Logistics Sector is categorized under Two heads.1. Public Sector 2, Private Ownership. Under Public Sector ownership the 124 Registered bodies and 1471 Private Sector Bodies available. T

The Prepared paper is Descriptive study in nature. The Primary Data is collected from sample pilot study from 60 Registered sample Respondents. The Secondary information have been collected from different Government Reports, published Books, Articles published in different Journals, periodicals, Conference Paper, working paper and Websites. For the sample study we have undertaken 60 Samples of Logistics Organizations for obtaining the primary Data.

GROUTH OF SUPPLY CHAIN ORGANIZATIONS GUNTUR.
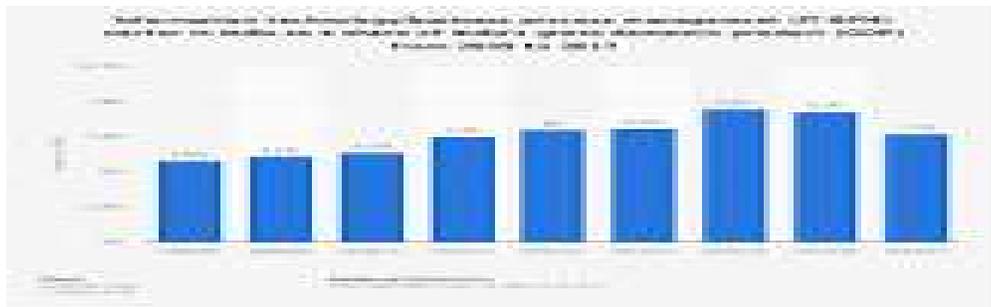
Growth of logistics and supply chain management Sector.

Major findings:
No. of Registered organizations selected fort sample study: 60
Socio- Economic status of the sample logistics organizers.

1.AGE OF RESPONDENTS:

AGE OF RESPONDENTS	NUMBER	PERCENTAGE
20-30	15	20.00
31-40	31	51.67
41-50	10	16.66
Above 50	04	6.67
Total.	60	100.00

Source: Pilot Survey.

2.. EDUCATIONAL QUALIFICATIONS OF THE RESPONDENTS:

CATOGORY	NO. OF RESPONDENTS	PERCENTAGE.
UNEDUCATED	O4	6.67
BELOW HIGH SCHOOL	17	28.33
METRIC	25	41.67
HIGHER SECONDARY.	06	10.00
GRADUATE	06	10.00
POST GRADUATE	02	3.33
TOTAL	60	100.00

SOURCE;   FILED SURVEY

3. GENDER OF THE RESPONDENTS;

GENDER	NUMBER	PERCENTAGE
MALE	40	66.67
FEMALE	20	33.33
TOTAL	60	100.00

SOURCE: FIELD SURVEY.

4. PAST OCCUPATION OF THE SAMPLE ORGANIZERS.

CATOGORY	NUMBER	PERCENTAGE
NO. OF OCCUPATION	25	41.67
BUSINESS	30	50.00
AGRICULTURE	00	00.00
SERVICE	05	8.33
TOTAL	60	100.00

SOURCE; FIELD SURVEY.

5.MARITAL STATUS OF THE RESPONDENTS.

CATOGORY	NUMBER	PERCENTAGE
MARRIED	43	71.67
UN MARRIED	17	28.33
TOTAL	60	100.00

SOURCE: FIELD SURVEY.

6. COMMUNITY OF THE RESPONDENTS;

COMMUNITY	NUMBER	PERCENTAGE
ANDHRA PRADESH	22	36.67
TELENAGANA	19	31.67
CHENNAI	06	10.00
BANGLORE	08	13.33
OTHERS	05	8.33
TOTAL	60	100.00

SOURCE: FIELD SURVEY.

7. TYPE OF ACTIVITY OF THE RESPONDENTS;

CATOGORY	NUMBER	PERCENTAGE
MANUFACTURING	22	36.67
SERVICING	38	63.67
TOTAL	60	100.00

8. NATURE OF THE BUSINESS ORGANIZATIONS.

ORGANIZATION	NUMBER	PERCENTAGE
SOLE PROPRIETARY	55	91.67
PARTNERSHIP	05	08.33
TOTAL	60	100.00

9. INFLUENCING FACTORS:

CATOGORY	NUMBER	PERCENTAGE
PARENTS	22	36.67
SELF	18	30.00
SPOUSE	08	13.33
FINANCIAL INSTITUTION.	07	11.76
FRIENDS	04	6.67
OTHERS	01	1.67
TOTAL	60	100.00

10. MOTIVATIONAL FACTORTS:

CATOGORY	NUMBER	PERCENTAGE	RANK
USE SPARE TIME	3	5.00	6
SELFLEARNING	23	38.33	1
UTILIZE TECHNICAL KNOWLEDGE	5	8.33	4
GOVERNMENT INCENTIVE	3	5.00	6
OVERCOME UNEMPLOYMENT	9	15.00	2
NEED TO BE ONES OWN BOSS	4	6.67	5
NO ALTERNATIVE FOR INCOME	3	5.00	6
FAMILY ENVIRONMENT	2	3.33	7
TRAINING	8	13.33	3
TOTAL	60	100.00	

11. PROBLEMS FACED BY THE RESPONDENTS IN OPERATING THEIR BUSINESS.

CATOGORY	PERCENTAGE	RANK
HOUSE RENT	66	1
HIGH INTEREST	58	2
LACK OF FINANCE	54	5
INADEQUATE INFORMATION	56	4
INSUFFECICENT DEMAND	38	10
INADEQATE INFORMATION OF MARKETS	46	8
LACK OF MARKETING FACILITY	48	7
TOUGH COMPETITIONJ	55	6
SHORTAGE OF SKILLED LABOUR	57	3
MANAGERIAL DIFICULTIES	28	11
STRICT GOVERNMENT R.T.O.	27	12
DELAY IN SUPPLY OF RAW MATERIALS.	20	13
HEAVY TAX BURDEN	40	09

EMPLOYMENT CREATION IN LOGISTICS INDUSTRY.

Sri K.V. Satyanarayana I.A.S. In his speech he focused the significance of Logistics in Economic Development and its importance. He stated that 4, 00,000 is the required no. of the Drivers but we are having only 2, 70,000 Drivers. There is a greater need for the Drivers, cleaners in India. A major concern of all decision makers has been to ensure that there are clear benefits from transport investment proposals. The travel time savings are clear, but the wider economic developments have presented enormous difficulty in terms of both theoretical arguments and empirical evidence. These issues are presented together with a major analytical investigation of macroeconomic models, evaluation in transport and microeconomic approaches.

12. DECISIONS TAKEN BY GROUP/SELF:

ORGANIZATION	NUMBEROF RESPONDENTS	PERCENTAGE
SELF-PROPRIETERY	25	41.67
PARTNERSHIP	35	58.33
TOTAL	60	100.00

13.TECHENIQUES USED BY LOGISTICS ORGANIZERS:

ORGANIZATION	IDM	DST	DME	DES	LPM	SCOR	AHP	IPM	KVP	INNOVATE
SELF PROPRITARY (15)		Y(8)				Y(7)				
SELF PROPRITARY(5)			Y(3)				Y(2)			
SELF PROPRITARY(5)	Y(2)				Y(2				Y(1)	
PARTNERSHIP (12)		Y(3)		Y(3)			Y(3)		Y(3)	
PARTNERSHIP (5)					Y(5)					
PARTNERSHIP (10)		Y(5)							Y(5)	
PARTNERSHIP (8)		Y(2)	Y(2)		Y(2)					Y(2)
TOTAL(60)	2	18	5	3	9	7	5	00	9	2

CONCLUSION:

GOVERNMENT IS MULLING INTEGRATED LOGISTICS PLAN

The Government is preparing an Integrated Logistics plan to fast track movement of goods and cut transactions cost of Business. The Government is preparing an Integrated Plan and portal to make logistics efficient and cost effective. Promoting trade and manufacturing are linked with Logistics, and improvement its efficiency would help boost economic development. Formulation of Integrated plan is important as the cost of Logistics for India is about 14% of its gross Domestic product (GDP) Indian Logistics Industry is estimated around $215 billion which is growing at over 10% annually. To improve efficiency, the Ministry is working on bridging infrastructure Gap, doubling rail tracks, electrification of Tracks, and construction of separate corridors for freight. To improve service delivery the government is simplifying processes and making it more consumers friendly.

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