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A LITERATURE SURVEY ON INVENTORY MANAGEMENT IN MANUFACTURING INDUSTRY

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Abstract: Research on inventory management that has been published in international publications are reviewed in this essay. Researchers are likely to benefit from this research because it identifies and presents a number of potential study subjects. The information consists of studies that have been published in Web of Science and other databases with Scopus indexes. The study gathered, arranged, and evaluated articles from more than 150 publications on inventory management. As they fit the parameters of this research on inventory management, more than 50 of the most interesting papers were reviewed. The research revealed the most popular areas for extending the Economic Order Quantity (EOQ) model with environmental factors, such as carbon emission costs and taxes, imperfect product quality, deteriorating goods, effects of fuel prices and emissions, growing goods, and discounts on spare parts for all-unit and partial backlogging with capacity constraint and supplier selection based on different techniques like ANP, AHP, fuzzy TOPSIS etc.

The highlights of the researchers' findings are clearly presented in this paper, along with the possibility of conducting additional research that has not yet been done. Researchers have been interested in the issue of inventory management for a while, and numerous models have been created to meet objectives with the least amount of investment.

Keywords: Economic Order Quantity (EOQ), environmental factors, tax emission cost, supply chain and Inventory Management

1 Literature Review

Ref No.	Author Name	Title	Highlights of work	Future Scope
1	Khan, M. A.-A., Shaikh, A. A., Cárdenas-Barrón, L. E.	An inventory model under linked-to-order hybrid partial advance payment, partial credit policy, all-units discount and partial backlogging with capacity constraint	• Under a linked-to-order hybrid prepayment and delay payment structure, an EOQ inventory model is investigated. • The EOQ model takes into account that the retailer's own	• Can be further investigated by including many real-world elements including multiple

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			warehouse's (OW) capacity is constrained. • Shortages that partially build during the stock out period are permitted. • The objective is to determine the optimum ordering and replenishment techniques.	products, imperfect products, and deteriorating products. • Can be widened by adding transaction costs to each instalment to satisfy the advance payment.
2	Maulana, S. K. D. B., Utama, D. M., Asrofi, M. S., Alba, N., Ningrum, I. S., Ahfa, H. A., Zein, T. A.	The Capacitated Sustainable EOQ Models: Models Considering Tax Emissions	• The study looked into the challenges of selecting lot size while taking into account sustainability, capital limits for purchasing raw materials, and taxes. • The Sustainable EOQ (SEOQ) models take into account environmental factors as well as capital restrictions. • The models proposed were used to reduce total inventory expenses.	• SEOQ models for multi-item items with capital and capacity restrictions can be created by future researchers.
3	Singha, K., Buddhakulsomsiri, J., Parthanadee, P.	Mathematical Model of (R, Q) Inventory Policy under Limited Storage Space for Continuous and Periodic Review Policies with Backlog and Lost Sales	• Mathematical formulas to determine the order quantity and reorder point for inventory management rules that specifically take storage space capacity into account. • The backlog and lost demand during stockouts	• A mathematical model for periodic review instances that can help to enhance the way these cases are

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			are taken into consideration, along with constant and periodic evaluations.	handled in the future. • The issue might expand to several goods using the same storage area.
4	Hovelaque, V., Bironneau, L.	The carbon-constrained EOQ model with carbon emission dependent demand	• A model that considers the connection between an inventory policy (EOQ), overall carbon emissions, and both price- and environment-dependent needs is developed. • When an exogenous price is present, two optimal quantities are found that maximise merchant profit while reducing carbon emissions.	• With cooperation from manufacturers and retailers, this work might be expanded to multi-level systems. • Examine a system with multiple levels where the full sale price(r) is based on the cost of emissions.
5	Battini, D., Persona, A., Sgarbossa, F.	A sustainable EOQ model: Theoretical formulation and applications	• From the point of placing the purchase order to the point when the material lot size reaches the end of its life inside the buyer plant, all sustainability factors related to that material lot size are examined. • The model includes consideration of the environmental effects of	• A comprehensive parametric analysis of the new S-EOQ model that compares various Pareto Frontier shapes while using a multi-objective

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			transportation and inventory and examines them from an economic perspective. • In order to give a simple technique, factors such as internal and external transportation expenses, vendor and supplier location, and various freight vehicle utilisation ratios are taken into account.	optimization strategy. • The impact of changes in a number of important criteria, including product weight and size, obsolescence risk, and purchase price.
6	Sarkar, B., Moon, I.	Improved quality, setup cost reduction, and variable backorder costs in an imperfect production process	• Demonstrates how a flawed production process affects the link between lead time, reorder point, and quality improvement. • By simultaneously optimising the setup cost, lot size, lead time, reorder point, and process quality parameter, the total system cost was decreased. • Applied the distribution-free technique to the lead time demand after first assuming that the lead time demand has a normal distribution.	• Can be expanded to include studies of fuzzy demand, product deterioration, and other topics. • One might think about using this approach to look at payment delays.
7	Arslan, M. C., Turkay, M.	EOQ Revisited with Sustainability Considerations	• EOQ model to integrate sustainability factors, such as social and environmental	Extensions of the EOQ model in the above models

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			considerations in addition to the standard economic factors. • Took into account the typical EOQ configuration, which calls for a single item at a single location with no backlogs, constant lead times, and an endless supply.	include quantity discounts, imperfect quality, and resource limits such as warehouse space. Assumptions may be modified to account for many items at different locations with scheduled backorders, varying lead times, and a finite production rate.
8	Bouchery, Y., Ghaffari, A., Jemai, Z., Dallery, Y.	Including sustainability criteria into inventory models.	• Reviewed traditional inventory techniques while taking sustainability issues into consideration. • It is not advisable to reduce all important aspects of sustainable development to a single goal. • Added several objectives to the classical economic order quantity model. • The sustainable order quantity model is then	The author has not taken into account imperfect procedures that could result in potentially defective products that need to be reworked, recycled, or scrapped.

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			explored in relation to a multi-echelon extension.	
9	Khan, M., Jaber, M. Y., Bonney, M.	An economic order quantity (EOQ) for items with imperfect quality and inspection errors	Developed a model to provide an optimum production or order amount that accounts for imperfect processes.	• In addition, understanding the inspection rate would increase the use of the model provided here. • In addition, understanding the inspection rate would increase the use of the framework introduced here.
10	Hua, G., Cheng, T. C. E., Wang, S.	Managing carbon footprints in inventory management	• Researched the carbon emission trading mechanism's inventory management practises used by businesses to control their carbon footprints. • Determined the best order quantity, and numerically and analytically assessed the effects of carbon trading, carbon pricing, and carbon caps on order choices, carbon emissions, and overall cost.	• Future studies may evaluate the effects of the cap-and-trade mechanism on the final consumers and take into account joint order and pricing decisions. • Examine the coupled order and transportation mode options is another

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				interesting problem because different modes of transportation will produce varied levels of carbon emissions.
11	Mandal, N. K., Roy, T. K., Maiti, M.	Inventory model of deteriorated items with a constraint: A geometric programming approach	• With limited storage capacity, an inventory model for deteriorating products is developed. • In this case, the rate of demand for the objects is finite, their rates of deterioration are constant, and they are refilled instantly.	• The author advised to use the stock-dependent demand, time-dependent demand, and other inventory models established in various situations with clear, fuzzy, and stochastic parameters and variables.
12	Balkhi, Z. T., Tadj, L.	A generalized economic order quantity model with deteriorating items and time varying demand, deterioration, and costs	• A dynamic inventory system was investigated under typical circumstances. • It is assumed that all of the functions, including the unit costs, deterioration rate, and demand rate, are general functions of time.	• The constructed model can be investigated further, for instance, in a finite time horizon.

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			• The model also takes into account shortages and partial backlogs.	
13	Mohan, R., R. Venkateswarlu	Inventory management models with variable holding cost and salvage value	• When the degradation rate is proportionate to time and the demand rate is believed to be a linear function of time, inventory management models are created for deteriorating items. • The model can be solved by allowing shortages. • The salvage value is applied to system components that have deteriorated.	• The application to numerous objects with holding costs and salvage values is possible.
14	Daniel Atnafu, Assefa Balda	The impact of inventory management practice on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia,	• Analyzed how inventory management practises affect organisational effectiveness and a firm's ability to compete. • According to the study, better organisational performance and a stronger competitive advantage can result from higher levels of inventory management practise. • Additionally, a competitive advantage may have an immediate, beneficial effect on an organization's performance.	• The conclusion might not be applicable to medium- and large-scale industrial companies. Future scholars are advised to look into it in the context of the large- and medium-sized manufacturing industry.
15	D.-H. Lee, M. Dong, & W. Bian	The design of sustainable logistics network under uncertainty	• Developed a stochastic programming-based method to take	• It is also important to look at the

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			uncertainty into account while designing a sustainable logistics network. • To highlight the value of the constructed stochastic model and the effectiveness of the suggested solution technique, a case study involving a sizable sustainable logistics network in the Asia Pacific region is presented.	network structure's long-term dynamic elements, such as establishing and expanding product recovery activities.
15	Gede Agus Widyadana, Leopoldo Eduardo Cárdenas-Barrón, Hui Ming Wee	Economic order quantity model for deteriorating items with planned backorder level	• Based on the literature search, this work represents one of the pioneering efforts by researchers to address the issue of deteriorating inventories in a straightforward manner. • This study develops a scenario of deteriorating inventory both with and without backorders. • For the purpose of fixing the deteriorating inventory model, the best solutions are contrasted with the traditional approaches.	• The solution process, including consideration of other variables like discounted quantity, etc., is outside the scope of the study.
17	Drake, M. J., Marley, K. A.	A Century of the EOQ.	• The author provided a brief history of the EOQ model by addressing the model's fundamental elements, certain implementation-related	

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			practical concerns, and significant additions to the core model, which were organised by the main themes of each succeeding decade.	
18	Shemshadi, A., Toreihi, M., Shirazi, H.	Supplier selection based on supplier risk: An ANP and fuzzy TOPSIS approach.	• Authors explored an ANP model that assesses how decision criteria affect outcomes. • The suggested method uses a set of five risk categories to normalise the weights of the risk criteria and influence the decision maker's choice.	• Authors explored an ANP model that assesses how decision criteria affect outcomes. • The suggested method uses a set of five risk categories to normalise the weights of the risk criteria and influence the decision maker's choice.
19	Mehar, M., Ahsanuddin, M.	A computational model for inventory management and planning.	• The study's goal is to identify the elements that contribute to the ideal level of merchandise inventory. • The most significant finding is that the true determinant of inventory volume is not "Usage of Material" or "Sales Volume." • The model's conclusion is that the difference between the return on investment in inventory	• If any of the presumptions are proven to be false, the model will still hold true but will need to be modified.

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			and the rate of interest on short-term deposits determines the volume of inventories.	
20	Vijayashree, M., Uthayakumar, R.	An EOQ model for time deteriorating items with infinite & finite production rate with shortage and complete backlogging	• This study's goal is to propose an EOQ model for time-deteriorating things, or perishable goods that, after a certain amount of time, cease to degrade but instead continue to do so over an indefinite and finite production rate with shortage. • According to the suggested model, the shortages are entirely backlogged. • It is assumed that the production rate is both unlimited and finite.	• We can utilise the exponential and linear penalty cost functions in this model.
21	Alam-Tabriz, A., Rajabani, N., Farrokh, M.	An integrated fuzzy DEMATEL-ANP-TOPSIS methodology for supplier selection problem.	• To account for the intricate interactions and manage trade-offs among criteria, an unique hybrid multi-criteria decision making (MCDM) methodology is developed. • Addressed the issues of reliance and feedback among criteria, the ANP method which is used to determine the proper weightings to each sub-criterion was established.	• A comparison between the suggested strategy and other MCDM techniques like VIKOR, ELECTRE, and even AHP.
22	Galankashi, M. R., et al	Prioritizing green supplier selection criteria	• Within the supplier selection framework,	• Taking into account social

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		using fuzzy analytical network process.	researchers took into account both conventional and green key performance indicators. • To balance and gauge the relevance of the extracted metrics, a fuzzy analytical network process (FANP) is adopted.	criterions together with the techniques used in this study.
23	Borgonovo, E.	Sensitivity analysis with finite changes: An application to modified EOQ models	• The method is used to conduct a sensitivity analysis of a discrete change in optimal order quantity following an increase in the exogenous variables of an inventory model based on non-linear programming.	• The method's generalizability is a primary subject of research. As it now examines the parameter space in two places, the approach is local in nature. • A quasi-global technique can be obtained by combining the method with scenario analysis or Monte Carlo simulation.
24	A. Gurtu, M. Y. Jaber, C. Searcy	Impact of fuel price and emissions on inventory policies.	• The goal of this article is to examine how shipment lot sizes and supply chain costs are affected by changes in fuel prices and the	• Can be expanded to look into how changes in transportation technology

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			implementation of a carbon tax on emissions from transportation. • In order to illustrate the effect of the carbon tax on different inventory policies, the EOQ models have been adjusted to reflect rising transportation costs.	are impacted by policies aimed at reducing emissions, such as a carbon tax or cap-and-trade system. • Future research may concentrate on using accurate data on fuel usage and emissions rather than averages.
24	Bozorgi, A., Pazour, J., & Nazzal, D.	A new inventory model for cold items that considers costs and emissions.	• Analyzed the mathematical foundation and developed a model to represent the holding, transportation, and emission costs in the specified cold chain environment. • Examined the trade-offs involved in making inventory judgments in the specified cold chain scenario based on lowering emissions against minimising cost.	• The inventory model can be expanded to include several products, multiple transporter sizes, multiple modes of transportation, multiple capacities, and multiple time periods.
26	Chang, H.-C.	A note on an economic lot size model for price-dependent demand under quantity and freight discounts.	• Developed a mathematical model of economic lot size for price-dependent demand with regard to quantity and freight discounts.	• To choose qualified candidates analytically, more research

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			• Authors also suggested a simple computer algorithm to arrive at a precise solution.	may offer formal proof.
27	Chen, Y.-J.	Structured methodology for supplier selection and evaluation in a supply chain.	• Developed a structured methodology based on the supply chain integration architecture for evaluating and choosing suppliers. • Used the TOPSIS (technique for order preference by similarity to ideal solution) multi-attribute decision-making (MADA) method to rank prospective suppliers.	• The outcomes of such selection and evaluation may include raising the capability and quality of product development, cutting the length and expense of the development cycle, and finally raising the marketability of the product.
28	Kannan, D., Jabbour, A. B. L. de S., & Jabbour, C. J. C.	Selecting green suppliers based on GSCM practices: Using fuzzy TOPSIS applied to a Brazilian electronics company.	• Developed a framework utilising Fuzzy TOPSIS to choose eco-friendly vendors for a Brazilian electronics manufacturer; • According to the findings, the four key factors are: Senior management's commitment to GSCM; Product designs that conserve resources by reusing, recycling, or recovering energy;	• Using fuzzy TOPSIS, choose the best provider; while integrating this MCDM model into the allocation model, take into account any constraints, such as those related to capacity or

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			• Auditing programmes and compliance with regulatory environmental regulations. Product designs that avoid or minimise the usage of poisonous or hazardous materials.	delivery lead time. • Other methods like VIKOR and PROMETHEE could be used in the future to conduct research and compare the findings.
29	Bon, A. T., Garai, A.	Just in time approach in inventory management.	• The Just in Time (JIT) concept, which aims to satisfy the constantly shifting needs of customers while lowering costs and improving quality. • According to the analysis that was done, the deployment of JIT has improved the management of inventories at the manufacturing of stamping parts.	• The scope of this research should be expanded to include more factories that produce electronic components. • Future research on the use of the JIT concept, particularly at the engineering and purchasing levels; and additional research on the JIT-related components.
30	Tabar, A. A. Y.,	Supplier selection in Supply chain	• Supplier selection is important for any firm	• Fuzzy TOPSIS is the

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	Charkhgard, H.	management by using ANP and fuzzy TOPSIS	since it plays a part in supply chain management cost reduction. • Developed an integrated technique for order preference based on similarity to the ideal solution utilising the Analytic Network Process (ANP) and fuzzy technology (FTOPSIS). • Because it is difficult to prepare precise numerical values for the criteria due to the complexity of evaluation, fuzzy TOPSIS is used in this paper to choose the best supplier. This paper adopts ANP to calculate the weights of each criterion of the model.	method that has been proposed for ranking and selection, but in order to satisfy this demand, the ANP has been chosen.
31	Das, A., Das, S.	Supplier selection for a pump manufacturing organization by hybrid AHP-TOPSIS technique and its impact on inventory.	• The weights of each criterion are determined using the Analytic Hierarchy Process (AHP), and the TOPSIS algorithm is then used to select the vendor in the most efficient manner possible. • By ranking suppliers, a competitive supplier who implements a green supply chain management (SCM) system has been selected.	• Take a more comprehensive approach to the supplier selection issue by taking into account the quantity of inventory items, energy usage, purchasing costs, and lead times of

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				inventory items. • Making use of the hybrid AHP-TOPSIS algorithm or other multiple criteria decision-making approaches
32	Dr. Angel Raphella, S	Inventory Management- A Case Study	• In order to help the organisation address its current problem, this study analyses its current forecasting model and makes a recommendation for an inventory control model. • The most significant multiple items are first identified using the ABC analysis technique for the inventory control system, and then the economic order quantity (EOQ) of each product is established to determine its own inventory model equation.	• More advanced methods may be employed to solve the inventory management issue in a more efficient and effective manner.
33	Hsu	A note on "An economic order quantity (EOQ) for items with imperfect quality and inspection errors."	• The author of this comment begins by pointing out the inconsistency in Khan M et al. [9]. (i.e., the returned items from the market were replaced with good quality items but the actual scenario is	• Research can be broadened in the event that demand is ambiguous. • Additionally, understanding the inspection rate would

Ref No.	Author Name	Title	Highlights of work	Future Scope
			that the returned items were not replaced by good quality items). • The authors then make the necessary corrections and create a revised EOQ.	also improve the utility of the model discussed here.
34	Salameh, M. K., Jaber, M. Y.	Economic production quantity model for items with imperfect quality.	• This study makes a production/inventory scenario in which goods are received or manufactured that are not of the highest possible quality. • The classic EPQ/EOQ model is extended in this study by taking into account items of variable quality while applying the EPQ/EOQ formulas.	• Imperfect products are removed from stock, resulting in lower holding costs per unit of time and larger lot sizes. It is necessary to assume that defective products are immediately reworked and retained in stock.
35	Gu, J., Zhang, G., Li, K. W.	Efficient aircraft spare parts inventory management under demand uncertainty.	• By minimizing total cost, the optimum order time and quantity can be discovered. • A mathematical model that has been developed assumes that the shortage period begins at the mean time to failure (MTTF) and that the shortage time is accurate.	• Due to a budgetary restriction, it is necessary to look into the issue for several given part numbers.
36	Snyder, L. V.	A tight approximation for an EOQ model with supply disruptions.	• Researched an EOQ inventory model with supply disruptions and a	• The inclusion of non-exponential

Ref No.	Author Name	Title	Highlights of work	Future Scope
			straightforward and accurate approximation. • When the order cycle is long compared to the length of operational periods (i.e., supplier can deliver products to buyer) and disrupted periods, this approximation is reasonably accurate (i.e., supplier is not able to deliver products to buyer).	disturbances and recoveries in these models
37	Rezaei, J.	Economic order quantity for growing items.	• Developed a new kind of inventory model for living things like animals and poultry. • The author develops an all-encompassing mathematical model for all types of living things. • Additionally, it was used to calculate how many chicks should be ordered at the start of the growth cycle as well as how long it would take to slaughter them.	• Research would be done to create this model for various growing things (different varieties of poultry and cattle), taking various forms of growth and feeding functions into consideration.
38	Paul, S., Wahab, M. I. M., Cao, X. F.	Supply chain coordination with energy price uncertainty, carbon emission cost, and product return.	• Under the conditions of uncertain energy (gasoline) pricing and defective items in transhipment, an EOQ model for a coordinated two-level supply chain is constructed.	• This framework can be used to investigate the effects of demand uncertainty, lead time uncertainty,

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			• By taking into consideration the percentage of defective items, transportation costs, setup costs, screening costs, holding costs, and carbon emission costs, it aims to identify the best production-shipment policy for the suggested model.	and multistage supply chain models.
39	Taleizadeh, A. A., Pentico, D. W., Saeed Jabalameli, M., Aryanezhad, M.	An EOQ model with partial delayed payment and partial backordering.	• Researched EOQ taking into account both combined partial backordering and delayed payment. • Given some thought to the possibility that the actual payment plan calls for a partial payment at delivery as well. • The answer takes into account the timing of revenues in relation to the permitted set delay for the remaining payment.	• The impact of backordering and advance payments can be evaluated.
40	Sunitha, K. V.	A Study on Inventory Management in Sujana Metal Products Limited.	• The topics discussed include choosing the appropriate type of control, determining the minimal economic order quantity, determining the reorder point, and determining safety stocks.	• Checking the improved EOQ's compatibility with environmental conditions.

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41	Alinovi, A., Bottani, E., & Montanari, R.	Reverse Logistics: a stochastic EOQ-based inventory control model for mixed manufacturing/remanufacturing systems with return policies.	• In order to fully and promptly satisfy consumer demand, this article focuses on mixed manufacturing/remanufacturing systems, which combine the production of new goods with the reuse or modification of existing ones. • For a mixed manufacturing/remanufacturing system, authors develop a stochastic Economic Order Quantity (EOQ)-based inventory control model. • In the end, the study offers practitioners a methodology for developing EOQ policies in reverse logistics scenarios and for assessing the viability of implementing a return policy in those contexts.	• Develop a model that takes into account the availability of extra historical data, namely links between return flows and previous deliveries, which may be relevant in situations where particular tracking systems have been put in place.
42	Chung, K.-J., Cárdenas Barrón, L. E.	The complete solution procedure for the EOQ and EPQ inventory models with linear and fixed backorder costs.	• In order to identify and guarantee the best solutions, the authors investigated the analytical solution technique for the EOQ/EPQ inventory models with linear and fixed backorder costs.	• More sophisticated inventory models can be created using the current solution approach.
43	Cárdenas-Barrón, L. E.	The derivation of EOQ/EPQ inventory models with two backorders costs using	• Various optimization techniques were used in the development of the EOQ/EPQ models.	• Additional advanced techniques for EOQ that will

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		analytic geometry and algebra.	• However, only linear backorders costs are taken into account in many of the works that deal with the EOQ/EPQ with backorders. • This work suggests a second straightforward strategy that makes use of algebraic and geometrical fundamentals.	be investigated, along with how they compare to the fundamental algebraic and geometrical ideas.
44	Deepak Rai, Behzad Sodagar, Rosi Fieldson, Xiao Hu	Assessment of CO2 emissions reduction in a distribution warehouse	• The impact of building materials and design on operating CO2 emissions. • The relative weight given to operational and embodied influences over the course of a building's existence. • The impact of substituting materials on embodied and operating CO2 emissions. • For the building's 25-year design life, the energy consumption was calculated using the Ecotect computer simulation tool.	• The design of structures and services may be considered in the study. • The belief that any software for modelling building emissions can accurately simulate the operational loads of the building using the available variables and parameters is another restriction.
45	X. Chen, S. Benjaafar, A. Elomri	The carbon-constrained EOQ.	• The author provides a circumstance in which it is possible to cut emissions by altering order quantities using the EOQ model.	• It is still conceivable to adopt the viewpoint of a social planner who selects the

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			• Moreover, the conditions under which the relative decrease in emissions is greater than the relative rise in costs are given, and factors influencing the disparity between the size of the emission decrease and the cost increase are discussed. • Discussed about the conclusions' application to systems covered by a range of environmental restrictions, such as severe carbon caps, carbon taxes, cap-and-offset policies, and cap-and-price policies.	specifications of the law to maximise social welfare (social welfare is the difference between the sum of the producer surplus, consumer surplus and tax revenue on one hand and the environmental damage on the other).
46	M. Y. Jaber, M. Bonney, & H. Jawad	Comparison between economic order/manufacture quantity and just-in-time models from a thermodynamics point of view.	• The typical economic manufacturing quantity (EMQ) models are modified by the author of this research by include the costs of transportation, employee stress, process quality, energy use, and greenhouse gas emissions. • Then, using entropy as a gauge of system sustainability, it applies the second law of thermodynamics to determine the amount of entropy produced by the modified EMQ and JIT models.	• The sustainability of the system can be evaluated in relation to the impact of various transportation modes on EMQ.

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			• The findings demonstrate that a JIT strategy can be more expensive to run than an EMQ approach when worker stress and entropy costs are taken into account.	
47	P. He, W. Zhang, X. Xu, and Y. Bian	Production lot-sizing and carbon emissions under cap-and-trade and carbon tax regulations.	• Two emission restrictions that are frequently utilised to reduce the carbon emissions produced by businesses are cap-and-trade and carbon tax. • This study investigates the production lot-sizing problems a firm faces under these two restrictions, based on the economic order quantity (EOQ) model, respectively. • The optimum lot size and emissions are attained in accordance with the two regulations.	• The choice problem can be researched using several models, such as the newsvendor model. • Demand that is stochastic can be more realistic and lead to new discoveries. • With the aim of, respectively, minimising the firm's overall costs and maximising social welfare, the firm and the government engage in a decision-making game.

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48	S. Ruidas, M. R. Seikh, P.K. Nayak	A production inventory model with interval-valued carbon emission parameters under price-sensitive demand	• A flawed production inventory model was created using the various carbon emission regulatory regimes, where the various carbon emission characteristics are interval numbers. • Four different inventory models are formulated based on four different policies—simple tax policy, cap and purchase policy, cap and reward policy, and strictly under permitted cap policy—that are addressed.	• Can be further extended by including shortages in the model, both fully and partially backlogged. • In addition, a variety of demand functions, including those that depend on stock levels, the passage of time, advertisements, or any combination of these, may be included.
49	X. Ma, P. Ji, W. Ho, C.-H. Yang	Optimal procurement decision with a carbon tax for the manufacturing industry	• In order to reduce the anticipated total discounted cost for a specific time period, the optimal order quantity was determined. • Taken into account as a single item with a predictable demand distribution	• Take into account other aspects. From the modelling perspective, potential factors such as demands, the supply market, emissions trading, and carbon capture and storage need

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				to be addressed.
50	N. Absi, S. Dauzère-Pérès, S. Kedad-Sidhoum, B. Penz, C. Rapine	The single-item green lot-sizing problem with fixed carbon emissions	• Researched the single-item lot sizing problem under periodic and fixed carbon emission limitations.	• The capability for supply (manufacturing and/or transportation) could be considered. • Continue the current work by taking into account the fact that fixed carbon emissions are related to the total quantity delivered rather than the quantity per product.
51	A. A. Taleizadeh, V. R. Soleymanfar, K. Govindan	Sustainable economic production quantity models for inventory systems with shortage	• The proposed models include a fundamental one that forbids shortages, and when they are permitted, operations managers can choose between the lost sale, full backordering, and partial backordering models based on the manufacturer's desire to raise service levels.	• These models can be improved by taking stochastic demand into account. Furthermore, by including sustainability-related challenges and factors, numerous traditional inventory control

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				models can be created.
52	M. R. Asadabadi,	A Revision on Cost Elements of the EOQ Model	• A revised method to calculate the economic order quantity is created by taking into consideration the capital cost of the inventory as well as potential stepwise increases in holding and setup costs.	• May take into account the rate of inflation and how it affects the model.

2 Findings and Discussions

The findings from the results above include:

- A majority of the studies that were reviewed used deterministic-type demands.
- The EOQ models take into account emissions from inventory holding, production, and transportation.
- Environmental considerations in EOQ models.
- Environmental considerations in EOQ models. Inventory Control
- Economic order quantities for deteriorating items, growing items, imperfect quality items, and inspection errors.
- Supply chain management supplier selection using ANP, AHP, fuzzy TOPSIS, etc.
- partial advance payment, partial credit policy, all-units discount, and partial backlog with capacity constraint in the linked-to-order inventory model, among other things.

3 Conclusion and Future Work

The frameworks are being evaluated by the author while taking into account the variables that make up the costs of the sustainable inventory, such as the fixed cost of an environmental impact for each cycle, the emission tax, order costs, purchasing, capital restrictions for the purchase of raw materials, and holding costs. i.e., assess the framework for Sustainable EOQ with and without emission tax, with and without capital limits, together with defective quality items, taking into account buy and repair choices.

This study recommends further research on a review of sustainable EOQ model for inventory management in manufacturing industry considering the effect of environmental factors, the effect of pricing and discount, multi-items, payment methods, rework and remanufacturing product, and advance technology.

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