

# The impact of Artificial Intelligence on E-commerce supply chain sector in achieving cost efficiency and economic growth: A business and economics perspective

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## Keywords

Supply Chain Management (SCM), Artificial intelligence (AI), Machine Learning (ML), GenAI, predictive analytics, economies of scale

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## Abstract

*The study aims to find how much cost effectiveness is achieved when e-commerce supply chain operations use automation and AI technologies. therefore,ing technology of AI and its models have essentially proved to be impactful in making data driven decisions by the organisations gaining leverage in productivity and profit sustainability in a way that the companies achieve competitive advantage therefore creating sustainable value propositions from business and economics perspective.*

## Aim/Purpose

*The aim of the paper is to explore the positive relationship between AI technologies and productivity levels in the e-commerce supply chain sector through achieving cost effectiveness and economic growth.*

## Methodology/Approach

*The study focussed on reviewing literature on how Artificial Intelligence driven technology can optimise various supply chain functions within e-commerce sector. Solow-Swan growth model has been applied to investigate the value AI creates in utilising capital, labour input to achieve output growth. Positivist approach that allowed for objective observation and independent conclusions has been adopted. For primary data, quantitative methodology is used through survey questionnaires to gather data from a sample of 206 employees, managers, data analysts in e-commerce supply chain sectors.*

## Findings

*The findings from the secondary sources inform that the use of AI and automation in the e-commerce industry leads to a high rate of productivity in terms of reducing costs and promoting economic growth. The primary research methods, through survey questionnaires collects real-time data that helps achieve quantifiable and measurable values to conclude that AI-led technology can increase productivity and competitive advantage as it saves cost while increasing productivity and overall economic input. Descriptive statistics of measures of central tendency were used to present findings in simpler, presentable way followed by interpretations of the data in percentages.*

## Practical implications

*Managers and decision-making directorial board members have important lessons to learn from these findings as the quantifiable values may give them an insight into how much capital investment should be allocated for AI technologies and how predictive analytics and data analysis can accelerate their service towards becoming customer centric. Significant strategic planning and implementation of resource management can lead to higher rates of productivity profitability and eventually higher economic growth.*

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## Introduction

The past decade has seen the exponential growth of Artificial Intelligence, ML and data analytics that have impacted people's lives in several ways. However, the inclusion of this technology into business has caused major digital transformation with various algorithms in marketing, production, supply chain and distribution functions of a business, where data can be gathered on customer preferences, then demand can be gauged and means to supply the need at an increased speed and accuracy is possible that can save time

and cost. Robotic machinery with IoT functions allows investment on physical capital yield productivity and operational efficiency. AI-driven technology in Supply Chain functions of e-commerce businesses has become a key driver of efficiency, scalability, and financial growth.

### **The use of AI in e-commerce Supply Chain operations**

The e-commerce Supply Chain Management (SCM) practices involve various functions around procurement of raw materials to logistics and distribution (Lee & Billington, 1995). All these functions require planning, end to end visibility, transparency, speed, resilience, accuracy and budget (IBM, 2023). The amount of time and cost spent on these functions become essential deciding factors when organisations want to achieve competitive advantage. To make these processes smarter and sustainable in terms of creating time and cost value, AI, with its mathematical programming, is becoming increasingly crucial as it can access and analyse data, predict demand and supply, enhance visibility of inventory and warehouse management, improve logistics and altogether meet customer expectations with speed and accuracy.

This is functionally proven in case of business to business (B2B) operations with a higher share of e-commerce market revenue which is expected to increase to \$20.9 trillion by 2027 mainly because manufacturers are using online platforms creating a unique environment where buyers feel highly competent to use e-commerce platforms (Research and Markets, 2020). Therefore, the supply chain practices face the requirement of being data driven in the functions of operational management and the use of AI in this regard becomes essential.

More importantly, integration of AI led technology gives cost advantage through various innovative interventions and automation and helps achieve economies of scale (CFI, 2023) and further substantiates the fact that the economics of AI networks can help businesses achieve market dominance (Wagner, 2020), This business and economic perspective aligns with Schumpeter's definition of innovation as it carries out business activities in a way it affects the realm of economic life positively (Sweezy, 1943). Solow-Swan growth model can also be adapted to consider the positive effects of yielding high productivity levels in the e-commerce supply chain sector with the inclusion of AI technology combined with capital, labour input.

The following section studies how AI-led technology provides businesses a leverage to increase profits by using predictive analytics, big data, data analytics in demand and supply planning, automated and robotic operations in warehouses, using generative AI and chatbots in customer relationship management and smart technologies and routing softwares in logistics. It also focuses on cost effectiveness in various SCM practices and how AI drives productivity growth in this direction.

## **Literature Review**

### **Reducing costs through AI-enabled Demand and Supply planning**

The advances of AI tools such as intelligent automation, data analytics, supply chain analytics and predictive analytics have allowed businesses to make strategic data driven decisions by planning according to the demand in the market and supplying as per the demand. Forecasting of demand ahead of time by studying market trends in a certain period enables organisations to achieve higher visibility, accuracy and speed in making timely decisions (Min, 2015, pp 89-96) and therefore increase cost effectiveness. With the use of comprehensive predictive models, e-commerce companies such as Amazon and Ebay are able to gauge future demand to make informed decisions which is then shared to their partners in supply chain to put in team effort to deal with demand competently, streamline operations and consequently increase time value (Forbes, 2021). When these processes are digitised, the data shared between suppliers can yield reliable and productive outcomes (Financial Times, 2022). Cognitive intelligence by AI can predict peak and non-peak times of the year so that businesses can set their priorities in functioning accordingly therefore allowing strategic decisions for real time order-sourcing and inventory optimisation (Financial Times, 2022). Such practices can save time and cost for the SCM operations. From economic perspective, the use of AI in e-commerce SCM sector has potential to create an economy of \$13 trillion (Liu & Lin, 2020) because the demand and supply functions indicate that the inclusion of AI increases the effectiveness of personalisation that yields higher rates of customer satisfaction and leads to increased demand for goods at a given price. For example, Amazon uses ML aggregation to predict customer behaviour regarding a product, analyse

demand for it and showed that such a practice in product-demand forecasting increased its productivity rate by 15 times (Forbes, 2021).

### **Saving costs in Inventory management**

Besides empowering SCMs with improved connectivity, visibility, and responsiveness with its predictive analytics in demand forecasting, AI has also been delivering impactful results through Machine Learning (ML) and robotics in the functions of inventory management to automate repetitive tasks, analyse data and promote communication among staff, reduce costs and boost overall performance of the organisation (Alotaibi, 2022). Most e-commerce companies such as Amazon, Alibaba and Ebay use robotics and Big Data to optimise inventory, maintain stockouts and overstock situations by making accurate predictions of the existing stock through the enhanced visibility provided by AI models. Inventory replenishment using real time data increases sales velocity and determines where and when the products should be made available (AWS, 2023). Automated Machine Learning (AutoML) is another modern method that aims to improve performance on time-consuming and iterative tasks by automating them. (AutoML, 2022). ML and ANN-enabled sensors can anticipate machine maintenance issues, identify quality issues, and detect data inconsistencies, resulting in improved performance and predicting potential disruptions. (Silva et al., 2017). This leads most business experts to believe that these smart applications may automate 40% of repetitive work in the sectors such as e-commerce divisions of marketing and hospitality in the next fifteen years (Loebbecke et al., 2020).

In case of packaging and item sorting, AI powered robotic machines reduce human labour and improve operational communication by offering feedback for self-correction and helps achieve almost 99% accuracy at packaging lines (Forbes, 2020). Added to this are the AI-led cameras which use rule-based analytics to read the bar codes, record and classify packages and move along the distribution process while administering quality checks and locate inherent issues thus reducing marginal costs and creating economic value (Forbes, 2020).

Robotic Process Automation (RPA) utilises machine learning and robotics to automate repetitive tasks like data recording, tracking orders, and invoices, making the processes time and cost effective and allowing businesses like Amazon to focus on demand forecasting and customer needs. Amazon successfully utilises robotics and AI in processing nearly 75% of its customer orders. (Tolba, 2023). Robotic technology and machine learning algorithms minimise the downtime so that the use of time and resources is optimised. For example, Amazon's Proteus robot, equipped with ML capabilities for perception and navigation, assists employees in lifting, moving wheeled transports, and packages, unlocking time value. (Amazon, 2023). Also, the AR ID (Amazon Robotics Identification) replaces the need for handheld scanners with its advanced camera system, allows employees to have better mobility, work with both hands and complete their tasks within the given time schedule (Amazon, 2023).

Such inclusion of AI tools helps optimise Lean, Agile and data-driven approaches to make the business achieve greater competitive edge (Michigan State University, 2023). These approaches fundamentally aim at reducing costs and making effective timely decisions that can be profitable to the companies.

### **Cost effectiveness in Customer Relations Management**

Most e-commerce SCMs include in their operations the task of automating CRM by collecting data of customer preferences based on past purchases and analyse their tastes and habits to produce items according to the demand (Zhu, 2022). For example, Amazon uses its in-house cloud-based system, Sales Force through AWS, to track its customers and their interactions so that it can make recommendations, making it a smooth and easy-to-use interface that enhances customer buying experiences with easy access to order history, tracking product software, and automatic returns policy (AWS, 2023). AI inclusion in CRM has significantly boosted its sales that in the fourth quarter of 2022, it reported \$149,204 billion in revenue which is a 9% increase from the previous year (Expert Market, 2023). The advent of AI and Generative content involving chatbots and algorithms such as ChatGPT have created increasing demand for personalised content so that businesses can use them as channels to reach customers without much human intervention. This market size has the ability to reach \$16.8 billion by 2030 (Forbes 2023). In 2022, B2B and B2C supply chains of up to 58% used chatbots while nearly 88% of online customers had a conversation

with a chatbot of which 69% were satisfied (Hostinger, 2022). The AI-driven chatbots serve the purpose as a customer service application which is economical as it offers round the clock customer service.

AI chatbots with their customer-facing application reduce costs in the functions of customer service. Most humanoid bots such as My Assistant tool by Walmart write up drafts and sum up large documents with data similar to Ebay using TCG Player to enhance its collectibles market (Retail Dive, 2023)

AI anomaly detection models make the administrative tasks such as payment transactions more accurate as the systems are trained to detect fraudulent practices involved with credit cards, improper claims by using artificial discretion. Through this model, organisations could save up to \$2.6 billion in 2018 by gaining four dollars for every dollar used (Bullocks, Yang & Wang, 2020).

### **Logistics and distribution**

In the retail logistics and e-commerce domain, order picking from the warehouses to delivering the finished product to the customer is a labour and cost intensive activity (Klumpp and Loske, 2021). The advanced AI-led routing algorithms help decide delivery routes which predict traffic jams, traffic times, delivery times, and vehicle capabilities therefore reducing time spent in traffic and the cost of delivery. Radio Frequency Identification (RFID) technology with IoT inclusion, helps cut down delivery times, monitor goods and track vehicles for routing to achieve better visibility (Financial Times, 2022). These systems increase value for operational retail managers as they find efficiency rates increasing in the order pickers as entrance hurdles as well as costs involved with time to invest are lowered (Klumpp and Loske, 2021). The quick deliveries provided by the ecommerce chains have become successful in planning, packing, distributing and physically dispatching on the same day and sometimes the same hour only because of AI technologies. Amazon's application called 'Flex' calculates the number of drivers and vehicles, the number of shipments and decides the sizes of containers into a vehicle (AWS, 2023) directly increasing the customer satisfaction levels and customer loyalty towards the company which in turn boosts sales. In the e-commerce age, poor routing and late deliveries can increase costs and time by 50% when the customers prefer one-day and one-hour deliveries, necessitating the use of standard routing software for faster delivery options. (AWS, 2023). Amazon has benefited from the inclusion of smart technology in terms of creating time value (time to invest) for those operational managers who preferred order pickers' efficiency while at the same time reduced transaction costs of entrance hurdles of securing a qualification – a transaction cost that relates to scientific management approach (Klumpp and Loske, 2021)

### **AI productivity in reducing costs and promoting economic growth**

The core of AI is to increase productivity; therefore, it is directly linked to economics and predictions in the economy because of which experts think that AI could hike the global economy to \$15.7 trillion by 2030 (Forbes, 2020). AI, using machine learning and deep learning, offers economic advantages by utilising digital economies of scale, reducing marginal costs and allowing for asset reuse (Forbes, 2020). AI is crucial in supply chain operations as machine learning and deep learning algorithms enhance customer value and help businesses achieve their economic objectives.

Statista records that nearly 51% of their survey respondents opined that the integration of AI can lower operation costs by over 20% which may be due to the fact that fraud could be detected more efficiently, market demand could be predicted, and sales could be monitored (Hostinger, 2022). For example, the combination of ML, deep learning and computer vision have enabled Amazon to measure the packaging exactly fit for each product since the technology has a smart automated mechanism to save cost and has reduced shipment packaging by 36% and eliminated 2 billion shipping boxes in 2021 (Amazon, 2023). Furthermore, the Digital age of e-business induced more efficiency within processes of an organisation with e-signatures, e-invoice, e-payments, mobile banking and altogether creating an e-commerce environment that cuts costs and boosts financial growth.

As a result, the amount of data is increasing at a high rate that AI systems are inevitably gaining prominence in the business world especially through the future trends in banking and financial services paving the way for new opportunities to reduce costs and increase revenues. (Dirican, 2015) as mentioned by Porter about value creation and competitive advantage theory where profitability and sustainability occur when costs are minimised or value is maximised (Porter, 1985).

## Theoretical frameworks

### Economies of scale

Technology can help businesses become more flexible and adaptable, lower expenses and errors, make the best use of their assets, and speed up operations and communications (Amazon, 2023). AI-enabled SCM operations offer potential for economies of scale, and a combination of technology and expert skills can create a productive AI ecosystem, allowing employees to be liberated from monotonous jobs. (Dive News, 2020). Reduction in promotional costs, reduction in logistics, cheaper capital and the fact that it spreads risk allows AI technology to achieve economies of scale (CFI, 2023). Supply-chain technologies cannot accomplish their business goals unless the appropriate solutions are used in this area to achieve economies of scale. (Financial Times, 2022). Economies of scale occur when long-term costs decrease and output increases, enabling companies to predict demand leading to bulk buy raw material, use advanced machinery, and aim at target specific markets for advertising. (CFI, 2023).

### Solow-Swan growth model

The levels of productivity gained through AI incorporated systems in e-commerce supply chain functions can be applied to Solow-Swan neoclassical exogenous growth model by the economists Robert Solow and Trevor Swan in the 1980s who proposed that long term growth is the outcome of more capital, labour and innovative technology. The aggregate production function is achieved when output i.e., higher rate of national income is a direct outcome of higher labour input, higher capital investment and the rate of technological progress or innovative ideas. In the case of the current study, AI is the factor affecting productivity and technology drives this productivity further to accelerate economic growth through reducing costs and increasing profits. This is exactly what is observed in the use of AI in e-commerce supply chain where automation, robotics in inventory and warehouse environments as well as predictive analytics and data analytics in demand and supply planning and use of chatbots and generative AI in improving customer relationships bring an equilibrium between the input of human capital, physical capital, and innovative technology. This equilibrium achieves productive growth and valuable output of more profits, therefore more GDP overall.

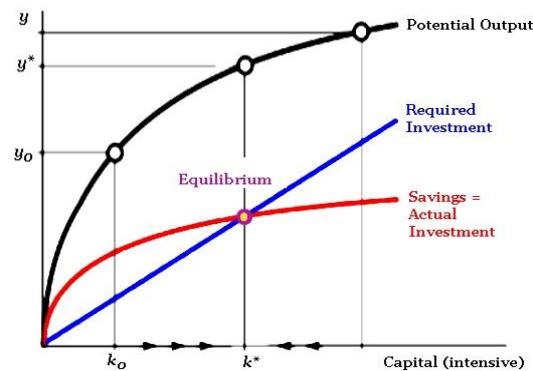


Fig.1 Solow-Swan exogenous growth model  
Source: Adapted from Solow-Swan (1956)

### Research methodology

The research investigates how AI and automation affect e-commerce supply chain management (SCM) in terms of cost effectiveness. It employs a positivist approach using quantitative methods to independently draw conclusions. The study utilizes both primary and secondary data, employing descriptive non-experimental research and subjective analysis to gain valid insights and analyze AI's implications on businesses. Employing a deductive research approach, the study examines cost reduction and uses standardized protocols to collect data from income statements and annual reports of e-commerce companies, steering clear of set beliefs and assumptions. Random sampling is used for cluster sampling, targeting various professionals in e-commerce SCM environments. Questionnaires were administered to collect data from groups directly involved in AI-led work environments. The study ensures validity through

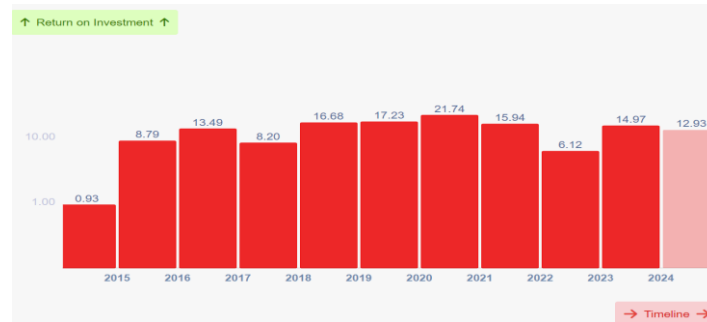
descriptive statistical tools and neutral data, preventing bias through random sampling. It also provides examples from e-commerce platforms like Alibaba and Amazon to enhance the generalization of AI's impacts on SCM operations.

## Findings and Analysis

### Secondary data findings:

Secondary data shows that businesses incorporating AI technology in their supply chain management have significantly increased their net profits. Amazon, for example, saw a 741% increase in net profit over the past decade (Statista, 2023), demonstrating the productivity growth rate in these sectors through cost savings.

#### ROI of Amazon Inc



Source: Statista (2023)

The graph shows Amazon's ROI (Return on Investment) where it is evident that the company could receive benefits from the investment in made. The data shown in the graph above indicates the steady returns for the past 10 years and have not been affected by changes in the market. The ROI metric is important as it shows how Amazon gained profits from the investment it made. It is also significant as it allows companies to make strategic decisions on investments in the future. The table below shows Amazon's investment on Technology and infrastructure and gross profit in billions of USD.

### Technological investment

Year	Technology expenses (billions USD)	Gross profit (billions USD)
2022	73,213	225,152
2021	33,364	197,478
2020	21,331	152,757
2019	11,588	114,986
2018	10,073	93,731
2017	3,033	65,932
2016	2,371	47,722

Table 1. Technological investment over 7 years in Amazon Inc. Source: Macrotrends (2023)

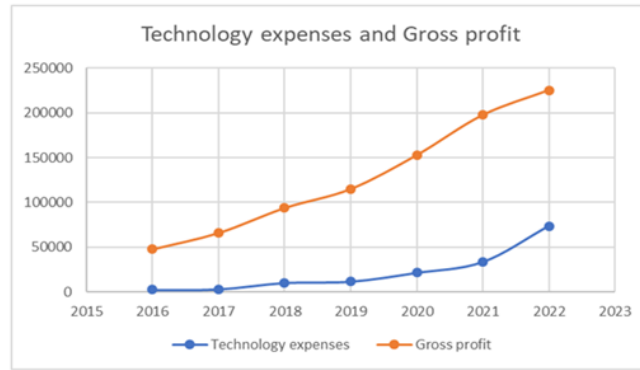


Fig 2. Graphical representation of information in Table 1

This data shows the relationship between the investments and profit gained during a period and indicates that decision to make investment in technology leads the company on growth trajectory. Since Amazon invested in Research and Development for AI technology, the steady returns gained point to the fact that inclusion of AI machinery and technology can ultimately earn profits for the businesses and overall economic growth for the nation.

**Primary data findings and analysis:**

Supply chain management practices are the performance indicators in this data study, and the primary data was gathered from 206 respondents to investigate the potential benefits of AI-led technology on these practices. Productivity is measured by cost effectiveness through savings on days in inventory, forecast accuracy, on-time delivery, and cost value gained through customer preference predictions and customer service via AI. The main data findings validated the data found in the literature study by providing a measurable percentage-value to know how much productivity is attained through cost savings. Percentage values alongside metrics generated by measures of central tendency of descriptive statistics are used in this analysis, and conclusions are derived from them with ramifications for the other SCM procedures.

The data gathered from the responses given in the survey questionnaire is summarised in the table below considering costs reduced on effective stock prediction, overall operational costs, packaging, robotics, labour and legal compliances, deliveries and distribution, use of chatbots and consumer preferences prediction. From the survey results gathered from 206 respondents, only category (2) i.e >40 and category (3) i.e >50 is considered in the table below. Those who chose under the value of <40 (category 1) was not considered as they were less than 20% of the sample.

Cost efficiency with AI in e-commerce SCM practices - no. of responses			
	<40%	> 40%	> 50%
Cost reduction on			
stock prediction	82	70	54
operational costs	80	69	57
packaging	77	75	54
robotics	68	88	50
labour & legal compliances	84	69	53
deliveries & distribution	75	70	61
customer service through chatbots	79	78	49
e-payments, e-receipts, e-bills	81	61	64
customer focussed e-commerce	75	70	61
consumer preference prediction	93	64	49

Table 2. SCM practices and cost efficiency of AI

The research explores the impact of AI models on supply chain management (SCM) practices in e-commerce companies and found that AI reduced time on stockouts and overstocks by 40% therefore avoiding unnecessary costs and increasing profits. Additionally, it revealed a correlation between investment on technology and profitability, highlighting the importance of operational excellence and timely delivery. Nearly 42% of respondents agreed that AI models such as predictive analytics, supply chain analytics, Big Data, Robotics, Machine Learning are used in the major e-commerce settings to produce impressive results of more than 40% gain in cost effectiveness. The research also revealed a significant increase in customer satisfaction rates to 59.73%, indicating operational excellence and therefore increasing productivity rates by 39%. It also explored the use of AI-led systems in supply chain operations, showing that predictive analytics, Gen AI models, robotics, and routing software significantly reduce cost by more than 40%, leading to increased profits. The primary data collected shows that 70% of respondents found the technology reliable, especially for faster service like Prime Now therefore increasing the number of sales. The efficiency rate on packaging is more than 50%, and real-time productivity is 63%.

The values presented in the table above are calculated using descriptive statistics as shown in the table below.

> 40%		> 50%	
Mean	71.4	Mean	55.2
Standard Error	2.386070689	Standard Error	1.69836523
Standard Deviation	7.545418036	Standard Deviation	5.37070242
Minimum	61	Minimum	49
Maximum	88	Maximum	64

Table 3. Measures of central tendency values based on Table 2

From the data presented, it is evident that the inclusion of AI technology into SCM sectors can enhance the capability of overall productivity in e-commerce companies. The average mean of over 71.4 for >40% and 55.2 for >50% with a standard deviation of only 7.5 and 5.3 indicate that there is high rate of consensus on the fact that this technology can be productive in yielding profits by more than 40% showing a positive relationship between AI technology and productivity and ultimately profits and economic growth. The graph below is a visual representation of the descriptive statistical values shown in Table 3.

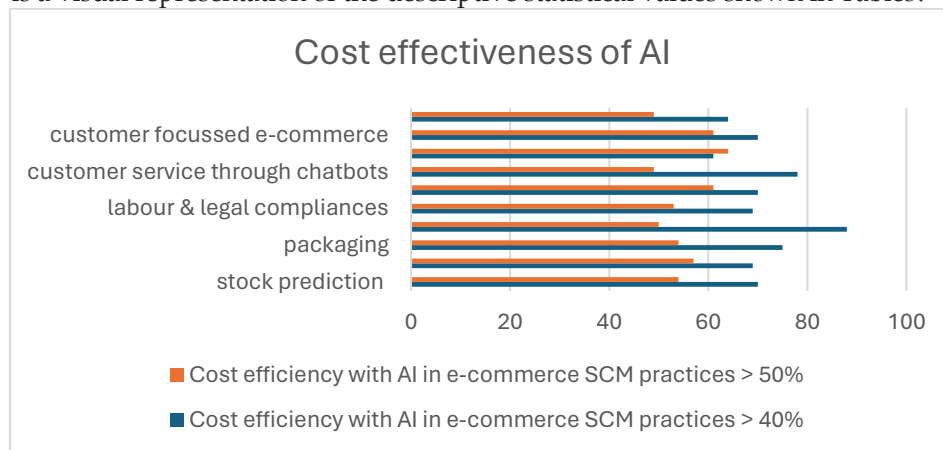


Fig 3. Graphical representation of cost effectiveness of SCM practices through AI

The data shows that there is a gain of more than 40% from the time saved on the repetitive chores around the warehouse which means that the time that is saved can be productively used to carry out further jobs therefore allowing the companies to produce more and ultimately promote overall growth. Predictive analytics model of AI, with its high rate of accuracy in predicting customer preferences, is evolving to be a lucrative tool for companies to manage supply and demand effectively. Inclusion of robotics and machine



learning have considerably reduced the cost on labour and legal compliances which means that the company can invest its funds on training employees to achieve higher skills in managing AI modelled machines. Furthermore, if a company can save up to 50% on overall operational costs on e-receipts, e-bills, chatbots and humanoids in the place of a live employee, GenAI for generating content, it amounts to considerably high profits which indicates that the capital invested on the projects has yielded good results. The amounts saved on one task can be reinvested on another so that there is growth in multiple areas. The high percentage values shown for customer engagement and customer satisfaction rates present a case that inclusion of AI through generative apps and chatbots have been motivating customers towards the business. Added to this is the efficiency growth rates in sourcing and distribution, deliveries which got quicker and therefore increased customer satisfaction rates. If the customers are satisfied, the customer base will increase, and this eventually grows the market share for the company and sustainability in profits will lead to overall economic growth of the nation. One of the key principles of economic growth, which is efficiency, is achieved through incorporating AI systems into work environment. Economic growth of a nation is a key indicator of gross national income as the personal consumption expenditures will grow leading to growth in workforce and eventually growth in productivity and increased per capita GDP.

### **Practical implications and recommendations for the managers at SCM operations**

AI has a major impact on SCM operations, accelerating productivity and profitability growth. Managers in this sector can learn vital lessons. First, effective demand and supply planning enables managers to make critical decisions about product life cycle, promotions, trend analysis, pricing, and consumer preferences. Given the pressing requirement for accurate forecasting and regular updates of cutting-edge techniques, artificial intelligence (AI) may be essential to these procedures. The frequency with which customers attempt to purchase or look for a product online is used to measure demand. These processes can speed up production lines, supply lines and increase productivity levels and eventually have a positive effect on overall economic growth. Therefore, the data provided by AI tools in about customer demand is essential for the managers to make quick and effective decisions.

AI technology can increase the likelihood that moving, loading, and unloading times can be cut by 50% through warehouse automation within the logistics component of supply chain management procedures. By determining the optimal path, the routing apps save money and time spent in traffic. This enables deliveries to reach customers faster and at a lower cost, with time efficiency exceeding 70% and cost efficiency more than 40%, improving productivity and giving businesses a competitive edge. Managers and data analysts have important lessons to learn here as the input obtained from this data points to the immediate need for not only investments in AI technology but also on training and development for the employees to cope with this inclusion. The ultimate goal of any organisation is to obtain a significant market share, and this can be achieved when capital investments in AI machinery increase, and operational costs reduced which eventually boosts profits and contributes to national income and overall economic growth. Hence, when managers and directors make key business decisions it is essential to consider the benefits of AI-led investments into their businesses.

### **Limitations**

Much of the data used in the primary research came from survey questionnaires. The analysis was quantitative, and interviews were not possible because of data protection and security regulations with e-commerce companies. Because the primary source of data for this study was survey questionnaire responses, it is quite narrowly focused. Research on how AI technology contributes to competitive advantage did not allow comparisons between different companies because there are very few e-commerce companies that have adopted AI enabled systems in their supply chain management (SCMs). Thirdly, the likelihood of bias in respondents' data combined with the lack of precision and end-to-end visibility in the data could be another constraint. Fourthly, the shortened duration restricted the ability of researchers to conduct in-depth research. Ultimately, the financial and operational risks associated with implementing advanced AI systems may prevent certain organisations from implementing the research findings.

### Conclusion and Recommendations for further study

The study's goal was to find out how using cutting-edge AI devices and systems may give SCM operations a long-term, cost-effective competitive advantage. The current study demonstrates that there is a significant amount of room for profit maximisation and cost and time efficiency achieved by e-commerce businesses through the integration of AI-led technologies into their supply chain management (SCM) systems. While recognising the limitations of this study, it can be concluded that the intended research objectives have been met, and the hypotheses that there is a positive relationship between investment on AI technology and productivity and economic growth. In the future research, it is recommended that more information is drawn on how much each of the e-commerce companies invest on AI technology per year. This information may bring more clarity on the trajectory of the economic benefits that AI may yield. Also, it is recommended that qualitative research methods should be used to obtain more reliable data from the employees and managers within SCM sectors.

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