AI – AN OPPORTUNITY FOR RE-IMAGING AND RE-IMAGINING CMA PROFESSION

Abstract

The effectiveness of CMA depends upon providing real-time relevant information to all levels of management for taking important strategic and operational decisions. With the advent of AI which bridges the gaps, the CMA can focus on analysis of manageable data and information through judicious use of AI. This article briefly covers the select AI tools, explains how AI works, discusses in brief certain Cost & Management applications with potential for using AI and summarises the AI-CMA framework. The authors opine that the CMA's need to reorient their abilities and role by adopting extensive and intensive usage of data and technology, thereby contributing to the growth and development of business enterprises by becoming their strategic partners.

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Genesis and Introduction

The constraints faced by the enterprises and the professionals in the Generation X and the millennial generation with respect to data processing and storage capacity are not the constraints for the current generation. The current generation attaches greater importance to data analysis and the availability of relevant information at the speed of thought and welcomes innovations that enable more efficient strategic management. This is where Artificial Intelligence (AI) bridges the gap.

"Artificial Intelligence" (AI) is not so new as many of us think. References to AI is as old as mid 20th century, when Alan Turing published his work "Computer, Machinery and Intelligence" which eventually culminated into the Turing test to measure the computer intelligence coined as the Imitation game.1 Though there were significant revolutions in the field of Computer Science and Information Technology, the AI revolution gathered pace only during the COVID-19 period[2]. The outcome of big data analysis were used for training algorithms for using Machine Learning (ML) and Artificial Intelligence (AI) for fighting the health crisis at the national level.

[1] www.tableau.com
[2] https://www.tec.gov.in/

Fig-II: Use of Big Data Analytics to fight COVID-19 (Source: https://ieeexplore.ieee.org/document/9141265)

Basically, AI as we now understand involves applications under different disciplines involving computer science, data science, data analytics, statistics, Hardware & Software Engineering, linguistics, graphics designing, audio productivity, video editing and many more. The relevance of AI from a business perspective is that the AI systems have capacity to learn and improve even if exposed to infinitely large volumes of data and identify patterns and relationships which have complexities making it virtually impossible for humans to decipher in a very short time.

Business enterprises which adopt and effectively use AI have a distinct competitive advantage over their peers and others in the relevant market arising from the speed with which information for strategic and operational decisions can be made in real time.

Cost & Management Accountants (CMA) positioned at the epicentre of information flow are very much concerned and dependent upon the availability of relevant information for strategic and operational decisions. In the absence of AI, a CMA and his / her team spend hours together on processing and analysis of large volumes of decentralised data / data sets and then derive / arrive at the necessary information. With the judicious use of AI, the CMA can focus on analysis of manageable data and information having obtained the relevant information through AI. **This is where AI Meets CMA: Precision, Performance Profitability, Transforming Numbers into Strategy with AI.**

How AI works

AI is concerned with creating systems that can replicate human intelligence and problem-solving abilities by taking in a myriad of data, processing it, and learning from their past without human intervention for streamlining and improving in the future unlike a conventional computer programme that would require human intervention to fix bugs and improve processes.

AI is concerned with creating machines that can learn, make decisions, and at advanced level perform tasks like a human being. At the most basic level, AI functions by taking in data and using an iterative processing system and different algorithms to learn from patterns found in the data, and then react to it in a specific manner, though it may need human intervention of a programmer to learn from mistakes and improve. Advanced AI machines can learn and grow on their own, independent of human intervention. More advanced AI can also measure its own performance each time this sequence runs and start iterating and improving its own performance.

Different types of AI run on different baseline AI algorithms, which make them react and learn in different ways. Some do simple tasks of categorizing data or making predictions. Some do much more complex tasks, such as driving a car without a human at the wheel.

Select AI tools at a glance

There are many AI tools available and being used. Machine Learning, Deep Learning, Explainable AI and Generative AI are generally used in Cost and Management Applications, which are briefly covered below: -

a. Machine Learning (ML): - It is a sub-set of AI focussing essentially on algorithms for extracting knowledge from data in such a manner that the machine can learn from the data to exhibit intelligence. ML is used to power many of the AI applications that have an impact in our day-to-day lives such as spam filtering and personalised recommendations.

b. Deep Learning (DL): - Deep learning is a sub-set of ML that utilizes artificial neural networks with multiple layers for analysing complex data patterns. Use of DL is specifically done for tasks involving images, videos, natural language and other unstructured data for instance facial recognition.

c. Explainable AI (XAI): - XAI refers to various methods that allows the understanding of the workings of the AI system such that the users are in a position to state why the AI system made a specific decision or prediction. Examples of XAI are Medical Diagnostics and Autonomous Vehicles.

d. Generative AI: - Generative AI is a type of AI that creates new and versatile content, text, images, music, audio, video etc. on the basis of learnings from the existing data. Generative AI may be either open source or proprietary. Examples of Open Generative AI include ChatGPT for text generation, DALL-E for image creation. Examples of Proprietary AI include Google Gemini, Microsoft Azure AI.

Chat GPT, which is the most popular generative AI model utilises deep learning methods to process and produce natural language text .This AI model is trained on vast amounts of text data, enabling it to capture human language patterns, nuances, and complexities. The core advantages of such extensive language models are their ability to understand the context of a given input and produce the correct output.[3]

Cost & Management Accounting Applications and potential for AI use

There are many potential areas where AI can be effectively used by CMA to furnish information to the management useful for strategic and operational decision making. In this paragraph, the potential with respect to Costing and Pricing Strategy, Break Even Analysis and Real Time data- driven Costing system are briefly discussed.

1. Costing and Pricing strategies

Determination of appropriate costing and pricing strategies depends upon internal as well as external factors. Internal factors include the objectives of the enterprise, estimates of costs, pricing structure followed by the enterprise and the marketing strategy. External factors include political / economic environment, market conditions, customer demand, competitive position and regulatory framework. Proper assessment of these relevant factors is very much necessary on a real time basis for deciding upon the appropriate pricing strategy. By leveraging AI for analysing extensive datasets generated internally and inputs on market conditions and other external factors, it is possible to narrow down on the optimum pricing strategy.

The use of AI is advocated under dynamic market conditions where it calls for adjusting prices on a real time basis. Under these circumstances, Dynamic pricing strategy is pursued. Examples are airline tickets where dynamic pricing is used to determine and adjust ticket prices based on fluctuations in demand, supply, place and time; Uber or Ola managing surge pricing; E-commerce companies to adjust in line with competitor prices or inventory levels. AI plays a pivotal role in dynamic pricing through Data collection and analysis along with use of advanced Algorithms and Machine Learning techniques.

To achieve or maintain a higher market share or a dominant position in the market, disruptive pricing strategies are followed by the enterprises. These can take the following forms: -

- Skimming pricing strategy (setting very high prices) to make the most of the dominant position in the relevant market
- Predatory pricing strategy (pricing below cost) with a view to curtail or eliminate the competition.

These disruptive pricing strategies are pursued to use as well as abuse the dominant position held by an enterprise. From a regulatory perspective, it is necessary for the CMA to be reasonably adept at AI so as to be in a position to detect such abuse of dominant position in the relevant market. This in turn requires the CMA to be well versed with the use of AI for such pricing strategies.

2. Break Even Analysis

The conventional Break-Even (BEP) Analysis or Cost-Volume-Profit (C-V-P) Analysis rests on the presumption of linear relationship between Total Sales and Variable Costs to present a simplistic model for calculation of BEP. However, in actual practice, this presumption does not hold good. For example, Sales after reaching a saturation point may show a downward trend or after reaching a certain level of outputs, the variable cost per unit may increase, thereby negating the presumption of linear relationship between Sales and variable cost. Consequently, the total cost line will be a curve sloping upwards to the right. In this situation, there would be two Break Even points and the optimum profit would be earned at that level of output within the "Profit Zone", where the difference between Sales and the total cost is the maximum. This scenario is presented graphically as under[4].

[3] https://www.mdpi.com

[4] https://managerial-accounting.blogspot.com/2012/11/curvilinear-cvp-analysis.html

Using AI, it will be possible to utilise historical sales data sets for analysis and predict future trends employing some common AI algorithms such as Regression Analysis, Machine Learning and Neural networks[5]. AI offers many possibilities, such as for example assigning probability factors and evolving Scenario Analysis (What if?) to predict how different variables impacting Break Even Point behave. Practically, BEP Analysis is used in the Retail Industry, Manufacturing Sector and Service sector and enterprises are able to manoeuvre by using AI and shift or extend their BEP level in the operations through expansion / diversification from local to global. AI makes this possible through multi-dimensional BEP analysis.

3. Real time data driven Costing system for budgeting and reporting

AI-Enabled CMA: From Costing to Strategic Impact

The principal objective of developing an elaborate costing system is to provide cost information for monitoring, control and strategic decision making. This monitoring is done through budgeting and variance analysis. The variance analysis vis-à-vis budgets will be effective only if it ascertains the root causes for the occurrence of the variance so that prompt corrective action can be taken to remedy the situation. Promptness is possible only if cost data and information is available on a real-time basis. With the advent of AI, by leveraging advanced algorithms and ML, it is possible for the CMA to present cost-related information to the management in real-time.

Further, the conventional techniques of cost and management accounting such as Standard Costing and Variance analysis can be re-oriented by using appropriate AI in combination with contemporary techniques like Activity Based Costing, Lean Manufacturing and Accounting, Target Costing etc. to obtain maximum benefits.

Given below is a summarised table depicting in brief how Activity Based Costing (ABC), Data Based Budgeting (DBB) and Standard Costing & Variance Analysis works with AI and its benefits:-

CMA Techniques	Examples of Best Use	Technology	How it works	Benefits
ABC + IoT + AI	Manufacturing, Operations and services specially logistics	IoT, ML	ABC allocates overhead costs to products or services based on actual resource usage. IoT sensors track machine usage, labour hours, utilities in real-time. Data flows into an AI-driven analytics platform that maps costs to activities. AI identifies inefficiencies and cost-saving opportunities.	Granular cost control, real-time product costing
DBB + AI Forecasting	SaaS, Retail, Services	ERP, ML	DBB links financial outcomes to key operational drivers (e.g., sales volume, headcount, churn). AI helps continuously refine models with new data inputs. Identifies key business drivers and cost centres Real-time integration with ERP/CRM systems feeds live data AI/ML models adjust forecasts and budgets based on trends and patterns	Agile budgeting, insight-driven planning

[5] https://www.thebricks.com/resources/how-to-do-a-break-even-analysis-with-ai#understanding-ai-algorithms-in-break-even-analysis

Standard Costing + AI	Pharma, Aerospace	ERP, NLP, ML	Standard Costing assigns pre-defined cost standards to products (materials, labour, overhead) Real-time ERP input flags deviations instantly AI clusters and categorizes variances, suggesting corrective actions	Variance analysis, root cause detection, Compliance, budget accuracy

Source: Compiled by the authors

AI CMA framework

The AI CMA framework will have four components namely AI Enablers, AI Capabilities, CMA processes and Outcomes, the essential ingredients of which are presented below

1. AI Enablers (Inputs)

Data: Transaction data (Purchases, Sales), Operational data (Production, Logistics), Customer behaviour, External data (market trends, competition)

Computation: Cloud infrastructure, Processing capacity of structured and Unstructured data, scalability of IT platforms

Policies & Governance: Data privacy, Data Protection and Regulatory compliance

2. AI Capabilities (Functional strengths)

Automation: Routine task completion (Data identification, Data Classification, Data entry, Data processing, Reconciliations and Report generation)

Prediction & Forecasting: Demand and Revenue forecasting, Predictive cash flow, Working capital projections, Detection of Anomalies and Deviations

Optimization: Resource allocation, Dynamic decision support

3. *CMA (Cost & Management Accounting) Processes*

Costing: Automated cost classification, activity-based costing with real-time data

Pricing: AI-driven price sensitivity analysis, dynamic pricing strategies

CVP (Cost–Volume–Profit) Analysis: AI-enabled scenario modelling, Break-even forecasts

Budgeting & Planning: Rolling forecasts, predictive budgeting, variance analysis

4. *Outcomes*

Accuracy and Reliability: Reduced human error, Data-driven decision support

Timeliness: Faster reporting, Real-time updates, Continuous monitoring

Valuable Insights: Profitability analysis product-wise, customer-wise, or market-wise

Strategic Agility: Proactive adjustments to costs, prices, and budgets

Way forward

It is often noticed that enterprises make efforts to automate processes and workstreams by using AI purely for saving time and cost cutting / curtailing headcount instead of re-engineering the operations by leveraging AI technology to obtain long lasting benefits which offer better financial value to the stakeholders[6].

By empowering Cost Leaders with Intelligent Analytics, AI offers perhaps the biggest opportunity to the CMA profession to examine the foundational as well as conventional techniques of cost and management accounting which have historically stood the test of time but need to be re-oriented in the wake of new opportunities offered through AI. From a CMA perspective, it should be clearly understood that with the use of appropriate AI, the focus shifts from data processing to data analysis and information management, which implies employing higher level managerial skills. It is really up to the CMAs to acquire and develop the requisite AI related skills to encash the emerging opportunities such that there is true value creation rather than mere cost cutting. In this era of dynamically evolving technologies, recently AI, the CMA's need to reorient their abilities and role by adopting intensive as well as extensive usage of data and technology, thereby contributing to the growth and development of business enterprises by becoming their strategic partners, much beyond being information providers. MA

[6] https://www.bcg.com/publications/2025/how-four-companies-use-ai-for-cost-transformation