International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 04 | April - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

Leveraging AI for Transfer Pricing Strategy Development and Execution: A Practical Approach

Karthik Hosavaranchi Puttaraju
Khosavaranchi@gmail.com

***Abstract*—Integrating artificial intelligence (AI) into transfer pricing strategies offers excellent opportunities for global companies to optimize taxes, thereby optimizing business strategies across international borders. This paper proposes a practical approach to an AI-driven framework for the development and execution of transfer pricing strategies. This paper also focuses on compliance, risk management, global profit optimization, and organizational value creation, which are considered to face increased scrutiny from tax authorities worldwide. The paper proposes a step-by-step approach that integrates AI technology into various stages of transfer pricing, from data analysis to documentation. With AI's data analytics, predictive modeling, and decision-making, companies can enhance accuracy and efficiency to meet compliance while enhancing business decisions. The framework discussed provides a practical guide for global organizations to navigate global taxation complexities.**

***Keywords*—Transfer pricing, Artificial Intelligence, Machine Learning, Data Analysis, OECD, Pillar 1, Pillar 2, BEPS, NLP, Automation.**

I. INTRODUCTION

Transfer pricing is the process of setting prices for intercompany transactions. This process has become a priority discussion topic for global organizations and tax authorities, especially after the formation of the OECD. Organizations can benefit from setting the right strategy to optimize taxes with the help of this process and manage their business effectively with a global tax strategy in mind. Global tax authorities like the OECD (Organization for Economic Co-operation and Development) set transfer pricing guidelines. For example, the OECD's Base Erosion and Profit Shifting (BEPS) project increased the regulatory requirements on how compliance and transfer pricing practices are managed in global organizations [1].

AI (Artificial Intelligence) offers solutions to these challenges by enhancing the capabilities of data analytics and predictive modeling. This paper explores how global organizations can leverage AI to develop and execute pricing and business strategies that are compliant with regulatory requirements and aligned with business objectives. This paper focuses on understanding the current technology support for the transfer pricing process and providing a practical framework for utilizing AI in the transfer pricing process. It also provides a step-by-step application approach highlighting the potential benefits and challenges of AI adoption,

II. LITERATURE REVIEW

A. Understanding OECD, BEPS, and Pillar

In the early 2000s, many large corporations used the intercompany transaction process to shift profits from one tax jurisdiction to another, so the OECD created the BEPS program to regulate the abuse of processes such as transfer pricing with a new Global tax reform. The BEPS program is targeted at setting guidelines for the processes involved in intercompany transactions. One of the main processes under consideration is the transfer pricing process. The process concentrated on setting the prices for the goods

and services, interest rates, IP royalties, and other such processes, which were a concern and needed to be appropriately governed. One such example was Apple's EU tax dispute, where Apple was accused of shifting its base profits to Ireland, thereby avoiding taxes in other European countries [2].

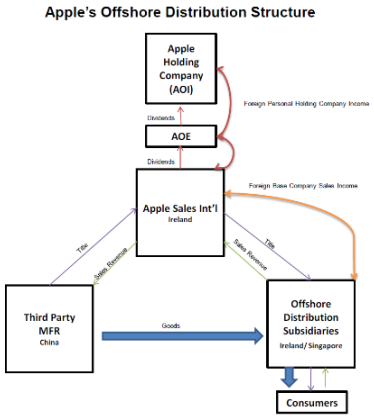

Figure 1: Apple's IP–based BEPS tools

Figure 1 shows Apple's structure to save taxes for over a decade. The source of the figure is Wikipedia. This process is expected from many other large corporations. According to the research done by Janský and Garcia-Bernardo, 40% of the profits are shifted towards countries with an effective tax rate below 1%, and estimated global profit shifting is close to 1 trillion USD with a total tax revenue loss range between 200 to 300 billion USD. The research also indicated that the high-income countries attracted most shifted profits while lower-income countries lost tax revenue [3].

This need created the need for the BEPS program to provide clear guidance and process to establish an unbiased and efficient communication process powered by technology that could help tax authorities apply proper taxes and hold corporations accountable. The results are the Pillar 1 and Pillar 2 implementations. Pillar 1 addresses large companies with a global revenue of €20 billion and provides guidelines on how the profits are reallocated to other jurisdictions. Pillar 2 addresses the need for a global organization to pay a minimum of 15% tax in each of the jurisdictions in which the company operates. [4]

B. Data Analysis and Benchmarking

The potential of AI in various aspects of transfer pricing is growing with the everyday evolution and application of AI in the organization's accounting and financial activities, fueled by digital transformation activities, which pose their own challenges. Machine learning algorithms can potentially explore the accuracy and effectiveness needed for transfer pricing. AI-driven data analysis could help understand the organizational culture's unknown behavior that would result in profit shifting and pose a legal threat to the organization, potentially improving benchmarking studies.

C. Risk Assessment

Predictive analytics and pattern recognition techniques can be applied to an organization's financial data to understand and identify transfer pricing risks and anomalies in intercompany transactions. This process could help the global organization address the risk before it attracts a tax audit.

D. Documentation and compliance

Natural language Processing (NLP) techniques can be used to automate the documentation aspects of the transfer pricing process, including country-by-country reports and local reports [5]. This could also help in understanding financial statements initially restricted by the language barrier.

E. Dynamic future enhancement

The reinforcement learning algorithm of AI can be helpful in developing frameworks that are dynamic adaptations of the transfer pricing actions in accordance with the changing marketing conditions and business strategies. This can be done with the help of current transfer pricing data and action taken to train the model and predict the next steps.

While AI's above capabilities show its potential in transfer pricing, a comprehensive framework for practical implementation is lacking.

III. FRAMEWORK FOR AI TRANSFER PRICING

The framework consists of a four-stage, 12-step approach to integrating AI technology to optimize and increase the efficiency of managing intercompany transactions. Each stage incorporates various AI and data analytics techniques to enhance different aspects of the transfer pricing process. The four-stages are

Figure 2: four stages of AI-transfer pricing

A. Data Preparation and Integration

Step 1: Data Identification and Collection

This step mainly concentrates on identifying relevant data fields from data sources such as ERP systems, financial databases, market research data, etc. Implementing AI-powered data crawlers could help automate the data collection process.

Step 2: Data cleaning and Harmonization

Once the appropriate data fields are identified, the next step is to identify and correct any inconsistencies in the data. There is also a need to standardize the process of considering currencies and other requirements. Machine learning algorithms can help detect and correct inconsistencies, while NLP techniques could help standardize the text from different sources.

Step 3: Data Integration

This step helps develop an AI-driven data warehouse to consolidate and organize transfer pricing data fields selected in the first step and corrected in the second step. Establishing an automated data refreshment process ensures real-time data availability.

B. AI-Driven Analysis and Modeling

The AI model in transfer pricing is supported by multiple AI techniques that are used effectively in multiple other industries. The main models that will be used are Machine learning, Natural Language Processing (NLP), Predictive Analytics, and Reinforcement learning.

Figure 3: AI models to support Transfer pricing

Step 4: Comparable Company Search

This step focuses on comparing the complete database for the global organization and identifying suitable entities for benchmarking. It is followed by grouping similar entities with similar activities into clusters and establishing relationships. The more comprehensive and comparable sets will reduce manual efforts and potential biases. Data from external sources could be used to establish industry benchmarks for consideration. The Machine learning algorithm can analyze the database, and NLP can interpret business descriptions to identify similarities. Automated AI clustering algorithms could group potential companies based on the industry, location, and size.

Step 5: Functional and Risk Analysis

This step deals with characterizing the functions performed, assets used, or risks assumed by each entity in the intercompany transaction data available in the database. This approach helps to capture any nuances that could have been missed in a manual approach. NLP and text mining techniques can help to analyze internal documents, emails, contracts, and notes efficiently, while machine learning can categorize functionals based on historical data or industry patterns.

Step 6: Economic Analysis

This step is crucial in ensuring that the analysis and transfer pricing process comply with local and OECD requirements. The ever-changing regulatory requirements can increase the organization's stress of understanding regulations and training people in them. In this step, the AI-based system helps select appropriate transfer pricing methods and determine arm's length relationships. Develop machine learning algorithms that can help in applying appropriate transfer pricing methods based on the transactional functions identified in step 5. Statistical learning algorithms can help to perform advanced regression analyses to determine arm's length. This step ensures that the data presented to the authorities in case of audit is at its full potential to defend the transfer pricing position.

C. Strategy Development and Optimization

Step 7: Scenario Analysis

This step focuses on using the data and establishing an arm's length relationship to understand the impact of different transfer pricing strategies on the tax position. Predictive modeling and machine learning can be used to forecast the impact of different pricing scenarios on the key financial matrix and the lab liabilities. A reinforcement learning algorithm can help enforce optimized pricing strategies. More comprehensive scenario planning could allow leadership to make informed decisions.

Step 8: Risk Assessment

This step is to identify and quantify transfer pricing risks across the organization. Expert-driven AI-powered risk scoring that considers factors like transaction size, probability of audit, jurisdiction, historical risk, etc., could help identify unusual transactions. Predictive models could also help understand audit risks and the ability to defend the data based on historical outcomes. This step helps leaders to understand the transfer pricing risk at an organizational level and devise a mitigation plan.

Step 9: Policy Formulation

This step focuses on developing a comprehensive and adaptable transfer pricing policy. A draft policy can be developed using analysis, historical data, and industry best practices using NLP. Automating the implementation of data-driven decision support systems in ERPs can help refine the policy. The transfer pricing policy can be robust and adaptive based on the changing business and regulatory requirements.

D. Execution and Monitoring

Step 10: Implementation Support

This step deals with the change management needed to achieve a smooth implementation of the transfer pricing. Utilizing reinforcement models and intelligent workflow systems in ERPs could help implement the policy. Automation can be used to adjust the price adjustments within the predefined guidelines, ensuring real-time compliance.

Step 11: Documentation and Compliance

Different jurisdictions require different documentation formats, such as local file reports, country-by-country reports, etc., regarding local taxation regulatory requirements. This step uses NLP and machine learning models to auto-generate significant portions of the transfer pricing documentation needed to support the audit or submit it to authorities. AI-powered compliance checkers could ensure that the documents meet regulatory requirements across all jurisdictions.

Step 12: Continuous Monitoring and Improvement

Long-term success can only be achieved with continuous monitoring. Continuously assessing the effectiveness of transfer pricing strategies and identifying the improvements is the key. An agile and responsive transfer pricing management would allow the continuous adaptation and optimization of strategies. AI-based knowledge systems and a chatbot could help implement the change effectively while tracking the performance indicators.

Figure 4: 4-stage 12-step AI-powered transfer pricing Framework

This framework and the step-by-step approach, shown in Figure 4, provide a practical guide for global organizations to implement the fast-changing global regulatory requirements. This also helps organizations to bring the digital transformation from product enhancements to understanding and applying knowledge to save on efforts spent inefficiently on managing and monitoring regulatory requirements. Additionally, this will enable the organizations to make informed business decisions, increasing efficiency and reducing risk.

By implementing the AI-driven framework, global organizations can improve their compliance position and establish a position to support current changes and calculations proposed under the Base erosion and profit shifting program (BEPS). This AI-powered system, as per Pillar 1 requirement, could not only help to calculate the reallocation of the profits but also to forecast the same; this helps organizations to plan business strategies according to their business goals. It also helps to estimate and cross-verify if the appropriate taxes are paid in each jurisdiction as per Pillar 2.

IV. CONCLUSION

Integrating AI into transfer pricing processes has a wide range of opportunities for enhancing compliance with regulations, improving efficiency in the organization, and helping business leaders make informed decisions, thereby optimizing business strategies. By implementing the proposed 4-stage, 12-step framework, global organizations could leverage AI effectively to design and execute robust transfer pricing strategies. As AI technologies evolve, their potential to serve and integrate into processes like transfer pricing is likely to grow, revolutionizing how global organizations manage their accounting and finance processes, such as intercompany transactions.

However, other challenges like data quality, the AI talent pool, and potential regulatory requirements for AI utilization need more clarification. The use of AI for making transfer pricing and, more broadly tax, tax-related decision-making needs more clarification from global regulatory bodies like the OECD.

V. REFERENCE

[1] "OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2022".
[2] "Apple's EU tax dispute".
[3] Garcia-Bernardo and Janský. "Profit shifting of multinational corporations worldwide". Jan. 2021.
[4] R. Rawal and M. Agarwal. "Pillar One and Pillar Two". Jul. 2021.
[5] K. Klassen, P. Lisowsky, and D. Mescall, "Transfer pricing: Strategies, practices, and tax minimization," Contemporary Accounting Research, vol. 34, no. 1, pp. 455-493, 2017.
[6] L. P. Kaelbling, M. L. Littman and A. Moore, "Reinforcement Learning: A Survey".
[7] J. J. Nay, "Natural Language Processing and Machine Learning for Law and Policy Texts".
[8] J. T. Behrens, "Principles and procedures of exploratory data analysis.".

[9] R. Tiwari, S. Srivastava and R. Gera, "Investigation of Artificial Intelligence Techniques in Finance and Marketing".

[10] I. M. Enholm, E. Papagiannidis, P. Mikalef and J. Krogstie, "Artificial Intelligence and Business Value: a Literature Review".

[11] K. J. Klassen, P. Lisowsky and D. Mescall. "Transfer Pricing: Strategies, Practices, and Tax Minimization". Wiley. vol. 34. no. 1. pp. 455-493. May. 2016. 10.1111/1911-3846.12239.

[12] N. Elgendy and A. Elragal. "Big Data Analytics: A Literature Review Paper". Springer Science+Business Media. pp. 214-227. Jan. 2014. 10.1007/978-3-319-08976-8_16.

[13] V. Kumar and L. Mo. "Predictive Analytics: A Review of Trends and Techniques". vol. 182. no. 1. pp. 31-37. Jul. 2018. 10.5120/ijca2018917434.

[14] S. Chaveesuk, B. Khalid and W. Chaiyasoonthorn, "Emergence of New Business Environment with Big Data and Artificial Intelligence".

[15] M. Bernard, Data Strategy: How to Profit from a World of Big Data, Analytics and Artificial Intelligence 2021