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# Factors Shaping the Future of the Global Economy and Finance

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## ABSTRACT

The global financial system emerged in the aftermath of World War II, playing a crucial role in the global economic and geopolitical landscape dominated by developed nations. However, the world is currently undergoing rapid changes. Developing countries are assuming increasingly important roles and positions in the global economy. The robust resurgence of Russia's military and political power as a superpower, along with China's rise in economic, technological, and military domains, is unveiling a new global order. Furthermore, the relentless development of digital technology is profoundly and comprehensively reshaping the economic, social, and political fabric of nations worldwide. Global issues such as climate change and population aging play significant roles in shaping the future of the global economy and finance. The research **objective** is to reveal and analyze the main factors shaping the future of the global economy and finance. The article employs a qualitative research **method** with analysis, synthesis and commenting on secondary sources of information from related studies. The authors **conclude** that six main relevant factors can influence the future of the global economy and finance: (i) the development of digital technology; (ii) geopolitical situation; (iii) the international role of the US dollar; (iv) climate change; (v) population aging; (vi) the inevitability of structural transformation.

**Keywords:** global economy and finance; digital technology; geopolitics; climate change; population aging; structural transformation; international role of the US dollar

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## ОРИГИНАЛЬНАЯ СТАТЬЯ

# Факторы, определяющие будущее мировой экономики и финансов

Т. Нгок Хунг, Н. Динь Чунг  
Университет Хоа Бинь, Ханой, Вьетнам

## АННОТАЦИЯ

Глобальная финансовая система возникла после Второй мировой войны и сыграла решающую роль в глобальном экономическом и геополитическом ландшафте, в котором доминируют развитые страны. Однако в настоящее время мир претерпевает быстрые изменения. Развивающиеся страны берут на себя все более важную роль и позиции в мировой экономике. Уверенное возрождение военной и политической мощи России как сверхдержавы, наряду с ростом Китая в экономической, технологической и военной сферах, открывает новый глобальный порядок. Более того, непрерывное развитие цифровых технологий глубоко и всесторонне меняет экономическую, социальную и политическую структуру стран во всем мире. Глобальные проблемы, такие как изменение климата и старение населения, играют важную роль в формировании будущего мировой экономики и монетарной системы. **Цель исследования** — выявить и проанализировать основные факторы, определяющие будущее мировой экономики и финансов. В статье применяется качественный исследовательский **метод** с использованием анализа, синтеза и комментирования вторичной информации из соответствующих исследований. Авторы делают **вывод**, что существуют шесть основных факторов, которые могут повлиять на будущее мировой экономики и монетарной системы, а именно: (i) развитие цифровых технологий; (ii) геополитическая ситуация; (iii) международная роль доллара США; (iv) изменение климата; (v) старение населения; (vi) неизбежность структурной трансформации.



**Ключевые слова:** глобальная экономика и финансы; цифровые технологии; геополитика; изменение климата; старение населения; структурная трансформация; международная роль доллара США

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## 1. Introduction

The global financial system represents a global framework comprising legal agreements, institutional arrangements, and both formal and informal economic agents that collectively facilitate favorable conditions for international capital flows serving investment and trade financing purposes. Since its emergence in the late 19th century during the first wave of economic globalization, its development has been characterized by the establishment of central banks, multilateral agreements, and intergovernmental organizations aimed at enhancing transparency, governance, and efficiency in the international market [1–4]. By the late 1800s, global migration and advancements in communication technology had created unprecedented opportunities for growth in international trade and investment. However, the onset of World War I led to a contraction in commercial activities as the foreign exchange market became paralyzed due to inadequate liquidity. Countries attempted to counter external shocks through protectionist policies, and trade virtually came to a standstill by 1933, exacerbating the impact of the global Great Depression until a series of reciprocal trade agreements gradually reduced tariffs worldwide. Post-World War II efforts to reform the international monetary system contributed to exchange rate stability and fostered record-breaking growth in global finance [5].

Developed countries (such as the United States, United Kingdom, Germany, France, etc.) play a significant role in the global economic and geopolitical landscape, and this can be attributed to several factors, including: (i) a market-oriented and open economy with a high level of technology and knowledge; (ii) high living standards for their citizens; and (iii) relatively stable political conditions. Despite the economic advantages of these nations, the world is undergoing rapid changes every day. New political alliances are being formed, creating economic development opportunities for countries, while the climate

across the planet is changing, bringing new opportunities for the development of less-developed regions in the North but exacerbating food crises in drought-prone areas. Developing countries are becoming an integral part of the modern world, made possible by the following factors: the increasing share of developing countries in the global economy; the rapid growth in the population of these countries as a proportion of the world's population (mostly due to natural growth); the rapid rise in their political influence on the world stage [6].

In addition, global financial crises, the Great Recession, and the Covid-19 pandemic have spurred new discussions on the structure of the global financial system. These events have drawn attention to financial integration, shortcomings in global governance, and emerging systemic risks of financial globalization. Since the establishment of the international monetary system under the supervision of the International Monetary Fund (IMF) in 1945, the world has undergone profound changes in politics and economics. This has fundamentally altered the operating model of international financial institutions, adding complexity to the tasks of the IMF and the World Bank. Non-compliance with the official monetary system has created gaps in global constraints on national macroeconomic policies and a lack of ability to regulate rule-based financial activities [5]. In particular, recent geopolitical conflicts, such as the direct confrontation between Russia and Ukraine, indirect conflicts between Russia and NATO led by the United States and Western countries, the Gaza Strip crisis between HAMAS and Israel accompanied by a series of sanctions, the freezing of over \$ 300 billion of Russia's foreign exchange reserves without any precedent in "wild capitalism," etc., have further divided and polarized the world. This inevitably affects the development of the global economy in general and the structure of the global financial system in particular. In this context, the study, identification, and forecasting of factors shaping the global economic and financial

landscape in the future have garnered significant attention and discussion among researchers.

## 2. Literature overview

The topic of prospects for the future of the global economy and finance has always been of interest to economists and international organizations, especially since the Russian-Ukrainian military conflict.

Erik Feyen et al. [7] predict that Fintech, the application of digital technology to financial services, is reshaping the future of finance. According to Tobias Adrian [8], many scholars and many policymakers have largely agreed that five key global forces will be pivotal in influencing the economy of the future: (i) the growth of digital technologies; (ii) the importance of sustainability, especially in the context of climate change; (iii) the role of changing demographics; (iv) the complexity of geopolitics; and (v) the inevitability of structural transformation. One of the largest European banks, the Swiss Credit Suisse, published a study titled “The future of the monetary system” [9], devoted to an analysis of the current state of the global financial system with a forecast for the future. Research highlights include: the position of the US dollar has weakened noticeably; freezing Russia’s foreign exchange reserves could undermine confidence in the dollar; abandonment of the petrodollar is unlikely, but do not forget about the yuan; creating an alternative global currency is a utopia; no national currency can supplant the US dollar; the world awaits a multipolar monetary system. Central Bank Digital Currency (CBDC), a digital form of fiat currency, is rapidly becoming a reality. The introduction of CBDC has the potential to be a game changer for the international monetary system. CBDCs are entering the global arena and will likely shape the next evolution of money [10]. The role of the US dollar in the global financial system is analyzed in detail by Carol Bertaut et al. in the study titled “The International Role of U.S. Dollar” [11–12].

## 3. Revealing and analyzing key factors shaping the future economy

In general, there is a broad consensus among scholars and policymakers that several key factors will play a pivotal role in shaping the future of the global economic and financial landscape. These factors include the development of digital

technology, particularly in the realm of financial technology (Fintech), the rise of cryptocurrencies and central bank digital currencies (CBDCs); geopolitical dynamics; the significance of sustainable development, particularly in the context of climate change; population aging; the inherent necessity of structural transformation; and the international role of the US dollar.

### 3.1. Development of digital technology

The development of technology, such as digitization and automation, will play a crucial role in promoting comprehensive and long-term growth and interacting with demographic changes that can reshape entire industries and sectors. Furthermore, the proliferation of digital assets and new forms of financial intermediation, both within and beyond borders, will also shape the global monetary system. Fundamentally, this factor can alter the context of global macroeconomic finance [8].

Financial technology (Fintech) facilitates growth and poverty reduction by enhancing the development of comprehensive and efficient financial systems while providing essential financial services for the advancement of digital economies. Strong advancements in technology are significantly transforming the financial landscape, bolstering the accessibility of financial services in more profound and comprehensive ways. Digital finance has enabled providers to overcome traditional channels and products, particularly in emerging markets and developing economies [13].

The financial market has witnessed the entry of independent consumer-focused fintech companies, new business-to-business (B2B) enterprise services, and “Big Tech” companies. Existing firms also view technology as a strategic priority to enhance their products, reduce costs, and compete effectively.

The pace of innovative and technology-driven advancements has accelerated in the context of the Covid-19 pandemic, propelling the digitization process across various sectors, including finance. Businesses and individuals have adapted to social distancing regulations, seeking efficient solutions to remotely connect with government and corporate services. Thus, the Covid-19 pandemic has reinforced the clear trend of rapid technological progress that is



reshaping the global economic and financial landscape [14].

In the next two decades, digital currencies will reshape the perception of money and its operations. Digital currencies are rapidly emerging due to the convergence of fundamental technological transformations, including breakthroughs in technologies such as Distributed Ledger Technology (DLT), cryptography, big data analytics, and artificial intelligence. These technological innovations complement each other and interact in ways that promote rapid change.

Digital currencies take various forms. On the one hand, there are innovations led by the private sector, such as stablecoins (e.g., Diem and USD Coin), cryptocurrencies (e.g., M-Pesa), and volatile cryptoassets (e.g., Bitcoin). On the other hand, there are digital currencies issued by central banks known as Central Bank Digital Currencies (CBDCs). CBDCs are digital currencies issued by the central banks of nations, under their control, management, and guarantee.

CBDCs are entering the global arena and will likely shape the next evolution of money [10]. The emergence of CBDCs and private cryptocurrencies (e.g., stablecoins and Bitcoin) will not only lead to increased currency competition but also enhance the complexity of governance, ranging from data-related issues to financial stability<sup>1</sup>. As CBDCs begin to be used in international and cross-border payments<sup>2</sup>, commentators have predicted that “the economic borders of today will no longer be limited by political borders”<sup>3</sup>. The development, management, and utilization of CBDCs will require high levels of international interaction in various aspects (e.g., CBDC’s interoperability and prevention of financial crimes). According to the Bank for International Settlements (BIS), 28% of surveyed central banks are considering options to “make CBDCs interactable by forming multilateral CBDC arrangements” [15].

### **3.2. Geopolitical status**

The trend towards the formation of a new world order continues to evolve rapidly and undergo complex transformations towards a “multipolar, multilateral” trend, with emerging entities competing for influence (such as Russia, China, India, etc.). This will continue to impact global trade, including supply chains and the financial system. With the current state of movement of major countries, the establishment of a “unipolar” world order (led by the United States) has failed due to fierce competition from other countries (especially Russia and China) and the inherent instability and America’s failures in foreign policy over 30 years after the Cold War. Because there was no longer a restraining role for the Soviet Union, which was a pole in the bipolar world order, the United States unilaterally launched many wars and caused many “hot spots” in the world. These policies and actions that go against international law are not only condemned by the world but also cause the US to consume too much economic, political and military potential, pushing itself into crisis. The first was the 2008 crisis [16]. The United States holds relative advantages but faces challenges in establishing a significant, comprehensive lead over the rest of the world to establish a “unipolar” order. This could potentially alter the current multilateral context and globalization in general. Such changes need to be addressed through mutually accepted means based on fairness, respect for mutual interests, and international law. The increasing number of large corporations globally can also pose new challenges for policy-making in various areas, such as taxation, regulation, service provision, and market power.

### **3.3. The international role of the US dollar**

Since its establishment in 1944, the global financial system based on the US dollar has undergone fundamental changes. The reality is that the US economy is gradually losing its undisputed leading position. Its share in global GDP is declining in the context of the increasing role of China, emerging markets and developing economies. According to the International Monetary Fund (IMF), during the period 1980–2023, US GDP as percentage of World GDP (GDP based on Purchasing power parity (PPP)) decreased from 21.32% in 1980 to 15.42% in 2023. Meanwhile,

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<sup>1</sup> Yao Q. Technological considerations of central bank digital currency. Yicai; March 6, 2018. URL: <https://www.yicai.com/news/5404436.html> (accessed on 14.10.2023).

<sup>2</sup> Bank of Canada, ECB, BIS et al. Central Bank Digital Currency. Foundational Principles and core features. 2020. URL: <https://www.bis.org/publ/othp33.htm> (accessed on 14.10.2023).

<sup>3</sup> Yeung K. China not among major central banks in talks on global digital currency. South China Morning Post. [https://finance.yahoo.com/news/china-not-among-major-central-093000064.html?fr=sycsrp\\_catchall](https://finance.yahoo.com/news/china-not-among-major-central-093000064.html?fr=sycsrp_catchall) (accessed on 14.10.2023).

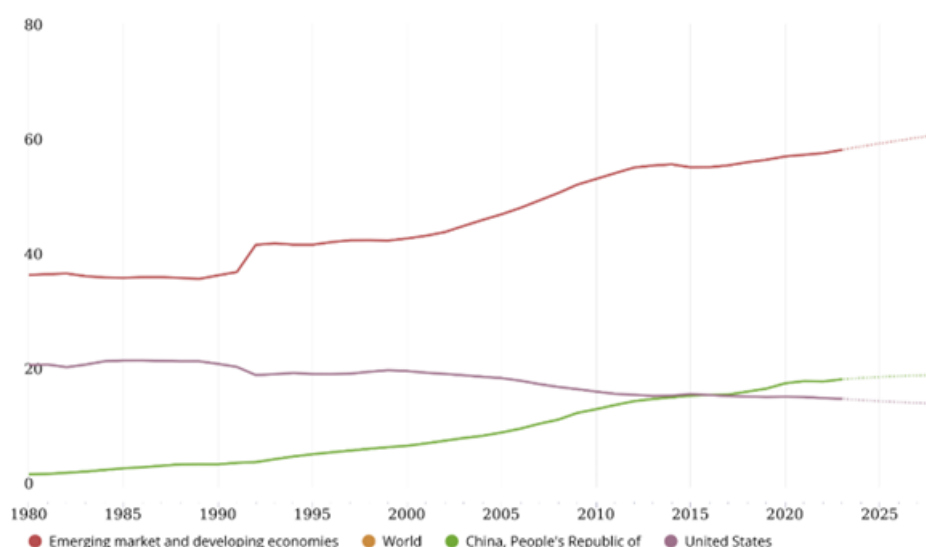


Fig. 1. GDP based on PPP, share of the world (percent of world)

Source: World Economic Outlook. IMF data mapper. October 2023.

emerging market and developing economies' GDP as percentage of World GDP increases from 37.02% in 1980 to 58.85% in 2023, and China's GDP as percentage of World GDP increases from 2.26% in 1980 to 18.82% in 2023 (exceeding the US) (see Fig. 1).

Another important indicator is the declining share of the US dollar in global foreign exchange reserves, from 72% in 1999 to 59% in 2022 (an average decrease of 0.5 percentage points per year). The declining share of the US dollar in this index reflects the increasing competition from other reserve currencies and the desire of foreign reserve holders to diversify their investments. Furthermore, in the past five years, the increasing share in global foreign exchange reserves has not been dominated by traditional reserve currencies such as the Euro, British Pound, or Japanese Yen but by new currencies led by the Chinese Renminbi [17, 18]. According to the IMF, the share of the Renminbi in global foreign exchange reserves has increased by 1.39 percentage points since 2017, and the share of other currencies (excluding currencies of developed countries) has increased by 0.78 percentage points (see Fig. 2).

The next factor determining the use of reserve currencies in the global economy, in addition to the domestic economic scale and international economic relations, is the scale, depth, and openness of the financial market, as well as the currency's ability to convert and its internal macroeconomic stability [19–20]. According to this indicator, the US economy

appears to be vulnerable due to the presence of twin deficits (trade balance and government budget) combined with increasing public debt, indicating a high likelihood of a crisis. According to the US Department of Commerce, the US trade deficit reached nearly \$ 948.1 billion in 2022, a 12.2% increase compared to 2021. According to the US Department of the Treasury, the federal government budget deficit for the fiscal year ending September 30 was nearly \$ 1.7 trillion, equivalent to 6.3% of GDP (compared to 5.4% in 2022) (see Figs. 3–4).

Analysts recalled the 1970s, when confidence in the US dollar was significantly eroded<sup>4</sup>. The current situation has become even more serious due to increasing geopolitical tensions. Both of these factors, combined, pose a serious threat to the global dominance of the US dollar. The financial markets of developing countries today have larger scale and depth, allowing these nations more opportunities to build collective cooperation in the financial sector and cross-border payment systems, in contrast to the situation observed in the 1970s.

On the other hand, the current geopolitical tensions play a role as a catalyst for changes in the global financial system. The events in Ukraine represent an unprecedented conflict: the significant economic sanctions imposed on

<sup>4</sup> Jack Egan. Dollar Weakness Casts a Shadow. December 7, 1977. URL: <https://www.washingtonpost.com/archive/business/1977/12/08/dollar-weakness-casts-a-shadow/bc622fc2-9d69-446f-aa48-ad02a1b1641b/> (accessed on 14.10.2023).

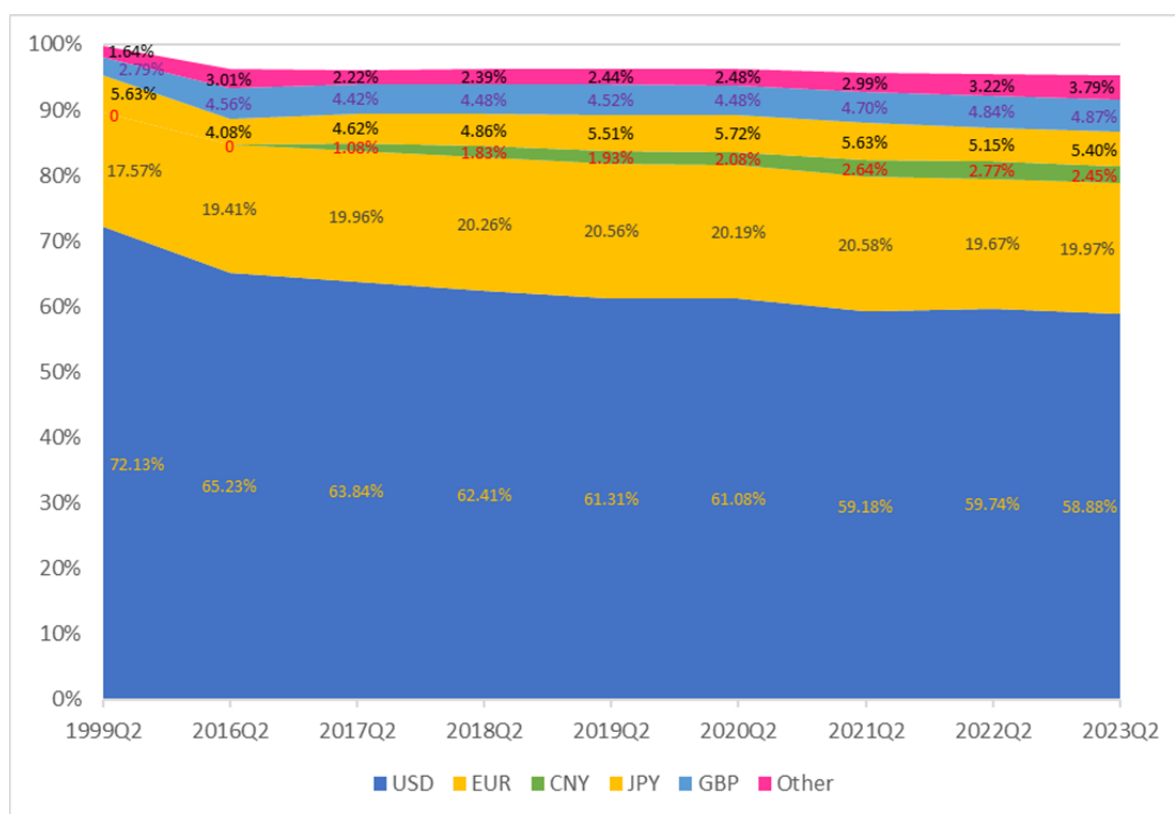
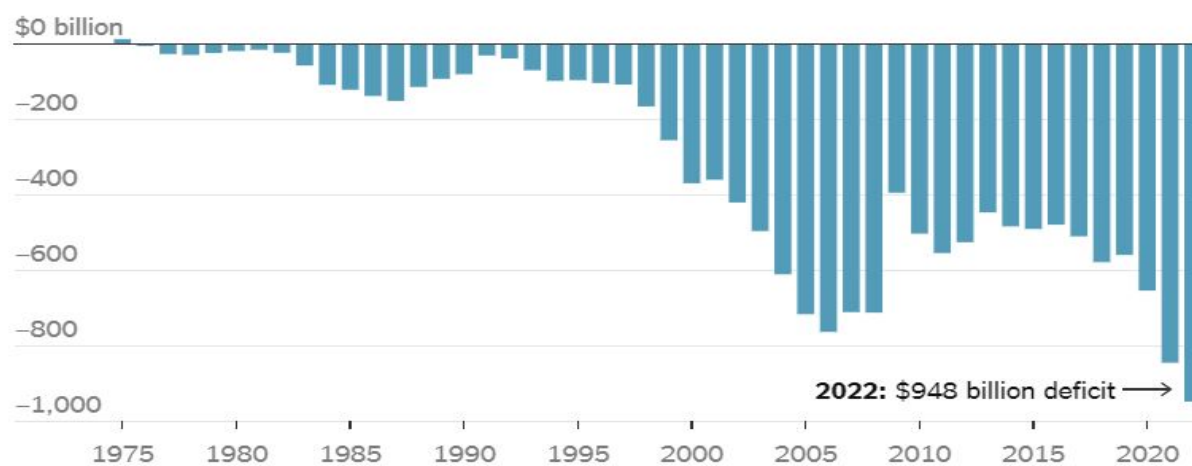


Fig. 2. Currency composition in global foreign exchange reserves

Source: IMF (2023). Currency Composition of the Official Foreign Exchange Rate (COFER).

#### Annual U.S. trade balance



Note: Goods and services, seasonally adjusted, not adjusted for inflation • Source: U.S. Census Bureau • By The New York Times

Fig. 3. US Trade Deficit during 1975–2022

Source: U.S. Census Bureau. By the New York Times.

Russia set it apart from any post-World War II military conflict [9].

It is believed by many scholars that the US freezing Russia's foreign reserves could encourage central banks in other countries to gradually abandon the US dollar and shift towards using alternative currencies, as these sanctions against

Russia would be perceived as a potential threat to any other nation. This would be a significant blow to the reputation of the US dollar, and subsequently, the United States would no longer be seen as a safe haven for investment. The financial reputation would not be restored in one or two years, and in the years that follow, this will

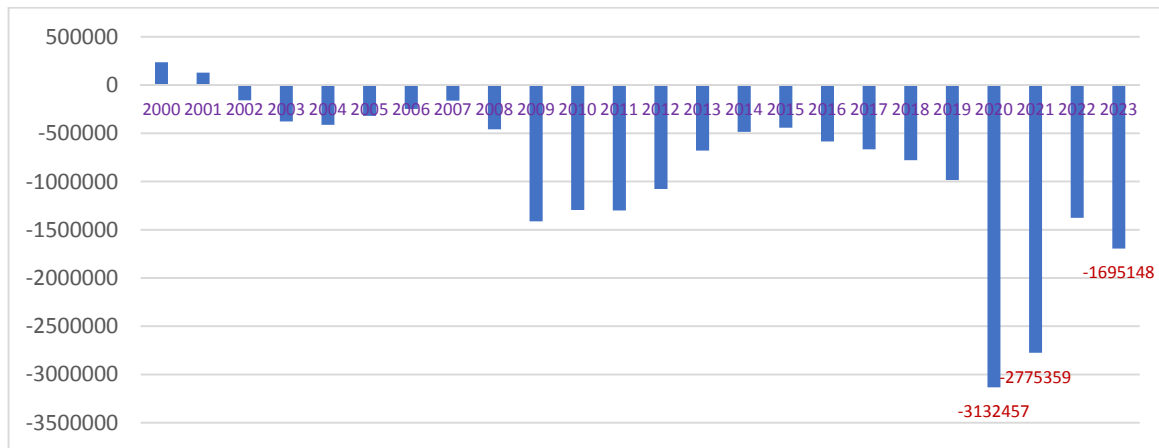


Fig. 4. Federal government budget deficit (Million USD)

Source: US Department of Treasury.

be much more pronounced: people will remember very little about the conflict between Russia and Ukraine, and the event of an asset seizure will be remembered for a long time<sup>5</sup>.

Therefore, a multi-polar currency system is possibly expected to exist in the future. This expectation is based on the rationale that the macroeconomic imbalances caused by the current geopolitical tensions will expedite the transition from the current US dollar-based monetary system to a more multi-polar system. This process is supported by observable trends such as:

Bilateral trade growth between many countries, allowing for increased profitability from using domestic currencies instead of the US dollar.

Enhanced capital attraction in the markets of developing countries (capital per labor increasing in the economy).

Efforts from leading emerging markets to develop contingency insurance programs against shocks arising from changes in US monetary policy [9].

### 3.4. Sustainability and climate change

On one hand, climate change and global warming will cause severe financial and macroeconomic damages, disproportionately affecting certain countries, often those already impoverished and/or experiencing food insecurity. Climate change has become one of the most urgent global issues, the largest non-traditional

security challenge, and one of the most serious challenges facing humanity in the 21st century, requiring the participation of all countries worldwide.

In recent reports, the United Nations Intergovernmental Panel on Climate Change (IPCC) has estimated that climate change has occurred at an unprecedented rate in the past 2,000 years. The United Nations warns that the global climate will be more severe by more than four times in 2100, and about 14% of terrestrial species and freshwater will face a “very high” risk of extinction even if the Earth’s surface temperature increases by only 1.5 °C<sup>6</sup>. The consequences of climate change deepen political and social conflicts in many countries, leading to the risk of instability, conflicts, terrorism, and more. Climate change has become a significant issue in the planning and policies of nations, with an increasingly high priority in foreign policies. Countries value and promote proactive and active integration, and international cooperation in response to and adaptation to climate change<sup>7</sup>.

Policies to mitigate and adapt to climate change will have financial consequences that may impact the economic prospects of many countries. On

<sup>5</sup> Financial Times. Financial warfare: will there be a backlash against the dollar? April 7, 2022. URL: <https://www.ft.com/content/220dbf2-2980-410f-aab8-f471369ac3cf> (accessed on 15.10.2023).

<sup>6</sup> The IPCC’s sixth assessment on how climate change impacts the world. 28.02.2022. URL: <https://www.carbonbrief.org/in-depth-qa-the-ipccs-sixth-assessment-on-how-climate-change-impacts-the-world/> (accessed on 01.11.2023).

<sup>7</sup> Lê Xuân Thuận. Biến đổi khí hậu từ góc nhìn đối ngoại và một số vấn đề đặt ra đối với Việt Nam. Tạp chí Cộng sản 30.10.2023. URL: <https://www.tapchicongsan.org.vn/web/guest/quoc-phong-an-ninh-oi-ngoai1/-/2018/829010/bien-doi-khi-hau-tu-goc-nhin-doi-ngoai-va-mot-so-van-de-dat-ra-doi-voi-viet-nam.aspx> (accessed on 01.11.2023).



the other hand, innovation and the enhancement, diffusion of technology — which can be facilitated by governments — will play a crucial role. This will open up significant new opportunities.

### **3.5. Population aging factor**

In general, the population growth rate is slowing down in most advanced economies and in some large emerging markets, such as China. At the same time, most low-income countries in Africa and other regions — along with some large emerging market economies such as India — are expected to continue benefiting from an increasingly growing working-age population [21].

As labor input is crucial for economic growth, these population trends create conditions for the shift of global economic activities from aging economies to relatively younger economies with an increasing population.

However, the extent to which this transition occurs will depend on several factors — including the ability of young economies to capitalize on their demographic advantage and the adaptability of aging economies to cope with a declining working-age population.

For young economies, the critical question is whether they can generate employment for the growing population by providing better education and relevant skills. Additionally, it is important for these economies to sustain comprehensive and sustainable growth by providing adequate healthcare services and social spending. This will make them more attractive to an increasingly mobile global workforce. Furthermore, it is crucial for these economies to have the capacity to attract capital from the rest of the world to supplement their abundant labor force. This requires progress in structural reforms.

In an increasingly interconnected world, when the prospects of a country or region change — whether due to the impact of climate change or economic development shortcomings — migration patterns can change rapidly. The loss of young, educated individuals can severely damage the economic prospects of a nation.

In comparison, for aging economies, offsetting the impact of a declining population will depend on their ability to increase productivity through labor-saving technologies such as automation and increasing labor force participation, as well as relying on migration.

Additionally, technological changes and other trends — such as climate change — will interact with population trends. Companies will increasingly have the ability to source labor inputs globally. Therefore, ensuring the flow of capital and labor as well as goods and services flexibility — through globally integrated supply chains — will become increasingly strained and, thus, more fragile than ever before, posing the most serious challenges [8].

### **3.6. Structural transformation**

The pandemic is a catalyst for structural transformation, driving technological changes, automation, and supply chain reallocation. This transformation presents both challenges and opportunities. The main risks are associated with chaotic labor shifts, inadequate control, imbalances in labor supply across sectors of the economy, and disruptions in the supply chain [22]. Alongside these risks, there are also opportunities to leverage this change to “build back better” — including focusing resources on climate change adaptation, promoting investment shifts towards low-emission economic development, implementing solutions to reduce vulnerability and enhance resilience to climate change, creating employment for a growing population in emerging and developing economies, and harnessing digital transformation to improve the efficiency of government service delivery and promote comprehensive finance. Government policies will be the tool to shape these changes — to accelerate the process of green, sustainable, and technology-driven comprehensive recovery [23–24].

All the aforementioned trends are happening and will interact and influence each other in multiple dimensions, with both positive and negative impacts, making forecasting and enhancing the effectiveness of social governance and national administration increasingly important.

## **4. Conclusion**

The world today is undergoing rapid and unpredictable changes. The Fourth Industrial Revolution, particularly the rapid development of digital technology, has profoundly and com-



prehensively transformed all aspects of the economic and social life of countries around the world. Issues such as climate change, population changes, armed conflicts, wars, terrorism, the destruction of essential infrastructure, poverty, etc., have led to an increasing global phenomenon of illegal migration. The diminishing role of the US dollar as the international currency and the trend towards the formation of a multipolar

currency system may be the main factors shaping the global economy and financial system in the near future. The article points out six main groups of factors that can influence the future of the global economy and finance: digital technology development; geopolitical situation; the international role of the US dollar; climate change; population aging; and the inevitability of structural transformation.

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## ORIGINAL PAPER

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# Assessment of the Modern Climate Policy of the European Union

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## ABSTRACT

One of the most important problems of the world community in the 21st century is global warming. To solve this problem, the Paris Climate Agreement was adopted in 2015. As part of the implementation of the Paris Agreement, on December 11, 2019, the European Union (EU) adopted the European Green Deal (EGD), which provides for achieving net zero greenhouse gas emissions by 2050. On July 14, 2021, the EU adopted the climate program Fit for 55, aimed at implementing the EGD. On March 8, 2022, the EU adopted an ambitious strategy to stop importing fossil fuels from Russia and transit to renewable energy sources (REPowerEU). This article **aims** to assess the modern EU climate policy. The **object** of the study is the modern climate policy of the EU. The **subject** of the study is the impact of EU climate policy on the EU's long-term competitive position in the global economy. The research **methodology** includes systemic, economic, institutional and logical analysis, induction, deduction and synthesis. Based on the analysis, the author **concludes** that the modern climate policy of the EU is a logical continuation of the implementation of the Marshall Plan to establish US domination over European countries with the aim of deindustrializing them. As a result of the implementation of this counterproductive policy, which is contrary to the national interests of the member states, the EU is experiencing stagflation, quickly losing its competitive position in the global economy. In this new reality, the EU faces the challenge of reviewing and adjusting climate policy in the region.

**Keywords:** climate; climate policy; greenhouse gases; global warming; European Green Deal; carbon border adjustment mechanism; EU emissions trading system; international cooperation; global problems

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## ОРИГИНАЛЬНАЯ СТАТЬЯ

# Оценка современной климатической политики Европейского союза

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## АННОТАЦИЯ

Одной из важнейших проблем мирового сообщества в XXI в. является глобальное потепление. С целью решения данной проблемы в 2015 г. было принято Парижское соглашение по климату. В рамках реализации Парижского соглашения 11 декабря 2019 г. Европейский союз (ЕС) принял Европейскую зеленую сделку (ЕЗС, European Green Deal), предусматривающую достижение чистого нулевого уровня выбросов парниковых газов к 2050 г. 14 июля 2021 г. ЕС принял климатическую программу Fit for 55, направленную на реализацию ЕЗС. 8 марта 2022 г. ЕС принял амбициозную стратегию отказа от импорта ископаемых видов топлива из России, перехода к возобновляемым источникам энергии (REPowerEU). В связи с этим в статье дана оценка современной климатической политики ЕС. **Объект исследования** — современная климатическая политика ЕС. **Предмет исследования** — влияние климатической политики ЕС на долгосрочные конкурентные позиции ЕС в мировой экономике. **Методология** исследования включает системный, экономический, институциональный и логический анализ, индукцию, дедукцию, синтез. В статье на основе проведенного анализа сделан **вывод**, что современная климатическая политика ЕС является логическим продолжением реализации плана Маршалла по установлению господства над европейскими странами с целью их деиндустриализации. В результате реализации этой контрпродуктивной климатической поли-

тики, которая противоречит национальным интересам государств-членов, Европейский союз переживает стагнацию и быстро теряет конкурентные позиции в мировой экономике. В этой новой реальности ЕС стоит перед вызовом пересмотра и корректировки климатической политики в регионе.

**Ключевые слова:** климат; климатическая политика; парниковые газы; глобальное потепление; Европейская зеленая сделка; трансграничное углеродное регулирование; система торговли выбросами ЕС; международное сотрудничество; глобальные проблемы

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## Introduction

In the 21st century, climate policy issues have acquired unprecedented relevance. Theoretical, methodological and practical issues and problems connected with the development, improvement and implementation of climate policy are considered in the publications of Russian and foreign scientists [e.g., 1–25]. However, in general, this issue has not been sufficiently studied.

According to meteorological data, the global surface temperature (determined at a height of 2 meters from the Earth's surface) in the 20th century increased by 0.6 °C. This is significantly more than that over the previous two thousand years.<sup>1</sup> Most experts agree that in the 21st century, global warming has continued. They consider that the rate of global temperature rise has been increasing in recent decades. According to the United Nations Intergovernmental Panel on Climate Change, anthropogenic factors play a decisive role in global warming, which is associated with an increase in the content of greenhouse gases (GHG) in the atmosphere, mainly carbon dioxide.<sup>2</sup>

Adequate and correct consideration of issues related to climate policy requires the definition of basic concepts in this area. Climate can be defined as the long-term pattern of weather conditions observed in a particular area; weather statistics. Climate policy is an activity to manage social processes aimed at mitigating the effects of climate change, adapting to climate change, strengthening and developing information, scientific, socio-economic policies in the field of climate.

Greenhouse gases are gaseous components of the atmosphere — both natural and anthropo-

genic — that absorb and re-emit infrared radiation. According to Annex A to the Kyoto Protocol to the United Nations Framework Convention on Climate Change, greenhouse gases include: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>).<sup>3</sup>

In order to solve the global climate problem, on December 12, 2015, the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) adopted the Paris Climate Agreement,<sup>4</sup> the strategic goal of which is to keep the increase in global average temperature by the end of the 21st century within much below 2 °C above pre-industrial levels of 1850–1900 and make an effort to limit temperature rise to 1.5 °C. As of September 2019, the Paris Agreement was binding on 185 countries and the EU.

## Overview of the literature

### on the modern climate policy of the EU

As part of the implementation of the Paris Agreement, the EU adopted the European Green Deal (EGD) (it is contained in the Communication from the Commission to the European parliament, the European council, the Council, the European economic and social committee and the Committee of the regions COM/2019/640 dated December 11, 2019). The EGD aims to achieve net zero greenhouse gas emissions in the EU by 2050.<sup>5</sup> The EGD has been identified

<sup>1</sup> Great Russian Encyclopedia. Vol. 14. Moscow: Scientific Publishing House "Great Russian Encyclopedia"; 2009:282.

<sup>2</sup> Climate Change 2022: Impacts, Adaptation and Vulnerability. United Nations Intergovernmental Panel on Climate Change, 2022. URL: <https://www.ipcc.ch/report/ar6/wg2> (accessed on 25.01.2024).

<sup>3</sup> Kyoto Protocol to the UN Framework Convention on Climate Change. Accepted on December 11, 1997. URL: <https://docs.cntd.ru/document/901880645> (accessed on 25.01.2024).

<sup>4</sup> Paris Climate Agreement. Accepted on December 12, 2015. URL: <https://docs.cntd.ru/document/542655698> (accessed on 25.01.2024).

<sup>5</sup> Net zero emissions mean reducing greenhouse gas emissions to levels as close to zero as possible, with any remaining emissions absorbed back out of the atmosphere, such as by oceans and forests.



as a top priority in the European Commission's (EC) strategy for the period 2019–2024.<sup>6</sup> In the interests of implementing the EGD, on July 14, 2021, the EC adopted the Fit for 55<sup>7</sup> climate program, which defines an interim goal — reducing GHG emissions by at least 55% by 2030 compared to 1990 levels and provides for the following measures to achieve it:

- introduction of carbon border adjustment mechanism;
- improving the effectiveness of the EU emissions trading system (EU ETS);
- making necessary adjustments to the EU ETS Market Sustainability Reserve;
- extension of the EU ETS to the maritime transport sector and implementation of CORSIA<sup>8</sup> for aviation;
- creation of a new ETS for emissions from fuels used in buildings and road transport;
- raising member states' emission reduction targets in a fair and cost-effective manner;
- increasing CO<sub>2</sub> emissions targets for cars and vans from 2030;
- reforming the regulations on land use and forestry;
- protecting and expanding the forest area of Europe.<sup>9</sup>

An important document in the field of EU climate policy is the ambitious strategy to stop the import of fossil fuels from Russia and transit to renewable energy sources, REPowerEU, contained in the Communication to the European Parliament, the Council and other European structures dated

March 8, 2022.<sup>10</sup> On May 18, 2022, the EC adopted a Communication containing measures to implement the above strategy.<sup>11</sup>

As the EC notes, as part of the EU's REPowerEU strategy, the following measures were implemented.

1. Diversification of energy supply sources. Since September 2022, Russian gas has accounted for only 8% of all pipeline natural gas imports into the EU, compared to 41% of EU imports from Russia in August 2021. The EC asserts that the implementation of the EU's REPowerEU plan has enabled the diversification of energy supplies mainly through:

- concluding agreements with third countries on pipeline imports of natural gas;
- investing in the joint purchase of liquefied natural gas;
- establishing partnerships with Namibia and Egypt to ensure a safe and sustainable supply of hydrogen;
- signing agreements with Egypt and Israel on natural gas supplies to the EU.

2. Ensuring affordable energy supplies. The EU Energy Platform, launched in April 2022, has played a critical role in diversifying energy supplies throughout 2022. The platform helps coordinate EU actions and negotiations with external gas suppliers to ensure EU countries do not stand in the way of each other in purchasing energy resources on favorable terms. The platform also leverages the power of the EU single market to achieve better conditions for all EU consumers. In 2022, the EU proposed common gas purchases to avoid any disruptions in energy supplies. This system allowed EU countries to provide some share of gas needs jointly rather than compete with each other for scarce supplies. In May 2023, the EU managed to attract applications from 25 supplying companies in the amount of more than 13.4 billion cubic me-

<sup>6</sup> Leyen U., von der A Union that Strives for More. My Agenda for Europe. European Commission, 2019. URL: [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf) (accessed on 25.01.2024).

<sup>7</sup> Communication from the Commission to the European parliament, the European council, the Council, the European economic and social committee and the Committee of the regions. "Fit for 55": delivering the EU's 2030 climate target on the way to climate neutrality. COM/2020/550 final. 14 July 2021. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC 0550&from=EN> (accessed on 25.01.2024).

<sup>8</sup> CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) is a global market-based measure designed to offset CO<sub>2</sub> emissions from international aviation in order to stabilize CO<sub>2</sub> emissions levels from 2020. URL: [https://www.icao.int/environmental-protection/Documents/CorsiaBrochure\\_8Panels-RUS-Web.pdf](https://www.icao.int/environmental-protection/Documents/CorsiaBrochure_8Panels-RUS-Web.pdf) (accessed on 25.01.2024).

<sup>9</sup> Delivering European Green Deal. URL: [https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal\\_en](https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal_en) (accessed on 25.01.2024).

<sup>10</sup> Communication from the Commission to the European parliament, the European council, the Council, the European economic and social committee and the Committee of the regions. REPowerEU: Joint European Action for more affordable, secure and sustainable energy. COM(2022) 108 final. 8 March 2022. URL: [https://energy.ec.europa.eu/system/files/2022-03/REPowerEU\\_Communication\\_with\\_Annexes\\_EN.pdf](https://energy.ec.europa.eu/system/files/2022-03/REPowerEU_Communication_with_Annexes_EN.pdf) (accessed on 25.01.2024).

<sup>11</sup> Communication from the Commission to the European parliament, the European council, the Council, the European economic and social committee and the Committee of the regions. REPowerEU Plan. COM(2022) 230 final. 18 May 2022. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN> (accessed on 25.01.2024).



ters of natural gas. This is significantly higher than the joint request of 11.6 billion cubic meters that EU companies submitted in the first tender (under the AggregateEU mechanism). EU companies will now be able to negotiate the terms of supply contracts directly with supplier companies.

3. New rules for gas storage. To avoid blackouts and power shortages, EU countries have agreed to fill gas storage facilities ahead of the 2023–2024 winter. The EU target agreed upon in 2022 was to fill gas storage capacity to 80% by November 1, 2022. According to the EC, EU countries have exceeded this target, reaching 95% of gas storage capacity.

4. Energy saving. At the EU level, member states have agreed to EC proposals for a voluntary reduction in gas use of 15% in winter 2022/2023. According to the EC, gas demand fell by 18%, exceeding the target. At the EC's proposal, in March 2023, the voluntary gas demand reduction target was extended by member states for another year.<sup>12</sup>

### **Findings and discussion: consequences, risks and vulnerabilities of the EU's modern climate policy**

Long before the adoption of the REPowerEU strategy, as a result of anti-Russian sanctions, a reduction in natural gas supplies to the EU began, which led to an energy crisis in the EU in September–October 2021. In accordance with the REPowerEU strategy, on April 8, 2022, the EU introduced a ban on imports from Russia of coal and other solid fossil fuels and, on June 3, 2022 — an embargo on maritime supplies of oil and petroleum products from Russia.<sup>13</sup> These bans have worsened the energy crisis in the EU.

Illegitimate and counterproductive anti-Russian sanctions introduced by the EU in accordance with the REPowerEU strategy contradict the national interests of EU member states and cause them significant damage. The energy crisis in the EU caused by these sanctions has led to an industrial crisis in the bloc. According to the Financial Times, many EU enterprises, faced with unprecedented increases in energy prices and declin-

ing competitiveness and consumer demand, have been forced to cut or stop production. According to analysts at the American investment bank Jefferies, about 10% of the production capacity of the EU steel industry was stopped as a result of the energy crisis. The European non-ferrous metal industry association (Eurometaux) said that all EU zinc smelters were forced to reduce or even stop production entirely. In addition, the block lost 50% of its primary aluminum production. Due to the energy crisis, about 27% of the production of silicon and ferroalloys and 40% of furnaces for the production of ferroalloys were mothballed. The fertilizer sector, which uses natural gas as a feedstock to produce ammonia, has also been hit, with 70% of its production capacity mothballed, according to the European fertilizer industry association Fertilizers Europe. The US investment bank Goldman Sachs estimates that 40% of EU chemicals production capacity is at risk of shutting down if rising energy prices are not contained. In a statement, the German chemical group Covestro noted: “Due to rapidly rising energy prices, we are constantly reducing our production levels in the EU”. A similar situation exists in the plastics, ceramics and other energy-intensive sectors. US consultancy Rhodium estimates that just seven EU industrial sectors account for approximately 81% of natural gas demand: chemicals; ferrous metallurgy; cement production; glass production; oil refining industry; pulp and paper industry; printing industry. In some of these sectors, temporary production stoppages not only result in losses but can also cause permanent damage to equipment. The French glass manufacturer Arc International was forced to stop part of its glass furnaces after a fourfold increase in the cost of purchasing natural gas. The stopped furnaces were irreversibly damaged and must be replaced. In addition, approximately one-third of the employees were furloughed for two working days a week, and demand for the company's products fell sharply. Due to widespread production shutdowns, European entrepreneurs fear that the energy crisis will lead to their displacement from the European market by competitors from regions with lower energy costs. According to D. Savorani, president of the Association of Italian ceramic producers, Confindustria Ceramica, “a reduction or cessation of exports, even temporary, can lead to an irreversible reduction in market share”. As noted in the statement of the European Association of

<sup>12</sup> REPowerEU plan. URL: [https://commission.europa.eu/strategy-and-policy/priorities-2019–2024/european-green-deal/energy-and-green-deal\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019–2024/european-green-deal/energy-and-green-deal_en) (accessed on 25.01.2024).

<sup>13</sup> The history of the introduction of EU sanctions against Russia in connection with Ukraine. TASS. 05.10.2022. URL: <https://tass.ru/info/15960409> (accessed on 25.01.2024).

Industrialists sent to the President of the EC Ursula von der Leyen and the President of the European Council Charles Michel, “rising energy prices are currently accelerating the decline in the competitiveness of European industrial energy consumers. Without immediate action to limit rising energy prices, the damage will be irreparable”.<sup>14</sup> According to the American observer L. Johnson, support by EU member states for US anti-Russian sanctions led to the shutdown of many enterprises and acceleration of deindustrialization in the EU, and the US itself faced an economic catastrophe, which was expressed in the collapse of its stock market and the growing recession.<sup>15</sup>

The preconditions for the current unprecedented crisis in the EU were laid in 1948, when the United States passed the Foreign Assistance Act,<sup>16</sup> which legally enshrined the so-called “Marshall Plan”. Put forward by former US Secretary of State G. Marshall, this plan provided for economic assistance to Western European countries affected by World War II on the basis of bilateral agreements. Aid totaling \$ 20.4 billion was provided over the next four years to eighteen Western European countries. 75% of this amount were non-repayable subsidies, and 25% were loans [2, p. 264]. The true goals of the Marshall Plan were the economic enslavement and deindustrialization of Western European countries, which were supposed to facilitate the establishment of political and military control over them by the United States. The Marshall Plan prepared the conditions for the creation of NATO in accordance with US plans [2, p. 264]. The creation of NATO in 1949 allowed the United States to consolidate its dominance over Western European countries. As a result, they continue to follow in the footsteps of US foreign policy. This was clearly demonstrated in 2014, when the EU supported the disastrous policy of anti-Russian sanctions imposed on it by Washington.<sup>17</sup>

<sup>14</sup> Will the energy crisis crush European industry? Financial Times. 19.10.2022. URL: <https://www.ft.com/content/75ed449d-e9fd-41de-96bd-c92d316651da> (accessed on 25.01.2024).

<sup>15</sup> Johnson L. Will Europe break with the United States? 23.09.2022. URL: <https://sonar21.com/will-europe-break-with-the-united-states> (accessed on 25.01.2024).

<sup>16</sup> Foreign Assistance Act of 1948. Approved on April 3, 1948. URL: <https://fraser.stlouisfed.org/title/foreign-assistance-act-1948-economic-cooperation-act-1948-1298/fulltext> (accessed on 25.01.2024).

<sup>17</sup> According to Hungarian Prime Minister V. Orban, the policy of economic sanctions against Russia contradicts the national

As a result of illegitimate and counterproductive anti-Russian sanctions, the industrial crisis, stagnation of GDP growth rates, HICP growth (see *Table*), stagflation began in the EU in 2022, leading to the rapid loss of the European Union’s competitive position in the global economy.

In this regard, a columnist for the American magazine Forbes K. Rapoza writes: “given that the price of one megawatt-hour of natural gas is more than \$ 100 higher than a year ago, the economies of Western Europe are moving into the Middle Ages”.<sup>18</sup>

It should be noted that EU climate policy contains numerous risks and vulnerabilities. This can be demonstrated with an example of the so-called “carbon border adjustment mechanism” (CBAM) of the EU. The first attempt to introduce CBAM dates back to 2019, when the corresponding Communication of the European Commission<sup>19</sup> to the European Parliament, the European Council and other European structures was published. On March 10, 2021, the European Parliament adopted a resolution<sup>20</sup> on the introduction of CBAM by 2023. On May 10, 2023, the Regulation of the European Parliament and of the Council 2023/956<sup>21</sup> was adopted, which contains the issues of the functioning of the CBAM. This Regulation provides for the introduction of a new carbon tax on the import of carbon-intensive goods into the EU (cement, iron, steel, aluminum, fertilizers, electricity and hydrogen).

interests of Hungary. He argues that due to mutual sanctions, the West will lose more than Russia: “We shot ourselves in the foot”. In this regard, V. Orban decided to look for like-minded people in the European union in order to rethink and change the entire EU sanctions policy [5, p. 266].

<sup>18</sup> Rapoza K. Europe is heading for “deep recession”, deindustrialization. 11.09.2022. URL: <https://www.forbes.com/sites/kenrapoza/2022/09/11/europe-is-heading-for-deep-recession-deindustrialization/?sh=796e6e2f4708> (accessed on 25.01.2024).

<sup>19</sup> Communication from the Commission to the European parliament, the European council, the Council, the European economic and social committee and the Committee of the regions. The European green deal. COM/2019/640. 11 December 2019. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX%3A52019DC%20640> (accessed on 25.01.2024).

<sup>20</sup> Resolution of the European parliament of 10 March 2021 towards a WTO-compatible EU carbon border adjustment mechanism (2020/2043 (INI)). URL: [https://www.europarl.europa.eu/doceo/document/TA-9-2021-0071\\_EN.html](https://www.europarl.europa.eu/doceo/document/TA-9-2021-0071_EN.html) (accessed on 25.01.2024).

<sup>21</sup> Regulation (EU) 2023/956 of the European parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism. URL: <https://eur-lex.europa.eu/eli/reg/2023/956/oj> (accessed on 25.01.2024).

Table

Main macroeconomic indicators of the European Union in 2011–2023, %

Indicators	2011	2015	2016	2017	2018	2019	2020	2021	2022	2023
Real GDP index	1.9	2.3	2.0	2.8	2.1	1.8	–5.6	5.4	3.5	0.5
Index of industrial production	3.7	2.7	1.8	3.2	1.2	–0.2	–7.3	8.3	1.9	–0.3
HICP	2.9	0.1	0.2	1.6	1.8	1.4	0.7	2.9	9.2	11.0
Share of EU in the world GDP	15.9	15.2	15.6	15.6	15.4	15.3	14.9	14.8	14.9	–

Source: Eurostat. URL: <https://ec.europa.eu/eurostat/databrowser>; IMF. URL: <https://www.imf.org/en/Publications/WEO/weo-database> (accessed on 15.02.2024).

CBAM came into force at a transitional stage on October 1, 2023. It should come into force as a permanent system from January 1, 2026.<sup>22</sup>

The industrial associations of the EU have already informed the public of the negative impact of CBAM on the economy of the bloc. In particular, according to the official October 2021 statement of the Association of French Enterprises (France Industrie), CBAM will harm primarily those industries that receive resources from third countries (aeronautics, automobiles, railways, mechanics, electronics, etc.).<sup>23</sup> CBAM will cause significant damage to the European aluminum industry. According to the May 2022 assessment of the impact of the CBAM on European aluminum producers, carried out by the English consulting company “CRU Consulting”, the introduction of the CBAM will negatively affect the aluminum industry in the EU for the following reasons:

- CBAM will put pressure on the cost structure of the European aluminum industry, which will lead to a loss of their competitiveness compared to foreign companies, as well as an increase in the prices of primary aluminum;
- inclusion of indirect GHG emissions in the “carbon footprint” for calculating the tax base of CBAM will lead to a further loss of competitiveness of European producers of primary aluminum;

- CBAM will negatively affect the costs of raw materials of European manufacturers of rolling and extrusion equipment;

- CBAM is a universal policy that does not differentiate depending on the characteristics of producers, which could harm the European aluminum industry.<sup>24</sup>

According to the November 2021 official statement of the European Association of Automotive Suppliers (CLEPA), the CBAM initiative contains the following risks.

1. Risks for processing industries. The introduction of CBAM will lead to an increase in the prices of a wide range of steel and aluminum products necessary for the production of cars in the EU. The CBAM initiative ignores the fact that EU steel and aluminum producers do not have sufficient capacity to supply EU automakers with the full range of steel and aluminum products required for production. As a result, the carbon tax will increase costs for EU automakers and reduce their competitiveness in the global market.

2. Risks of distortion of competition conditions. Automotive component manufacturers in the EU are currently under increasing competitive pressure from other countries. CBAM will create unequal conditions for competition between European and foreign manufacturers. While European automotive component manufacturers will have higher costs due to the carbon tax, the costs of their foreign competitors will be comparatively lower. This

<sup>22</sup> Regulation (EU) 2023/956 of the European parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism. URL: <https://eur-lex.europa.eu/eli/reg/2023/956/oj> (accessed on 25.01.2024).

<sup>23</sup> Carbon Border Adjustment Mechanism. Considerations and proposals of France Industries. October 2021. URL: <https://www.franceindustrie.org/wp-franceindustrie/wp-content/uploads/2021/10/France-Industrie-CBAM-Considerations-and-proposals-04102021-VF.pdf> (accessed on 25.01.2024).

<sup>24</sup> Aljanabi Z., Henry A., Pegrum L. Assessment of European Carbon Border Adjustment Mechanism. CRU Consulting, 31 May 2022. URL: [https://european-aluminium.eu/news\\_events/cru-study-assessment-of-european-carbon-border-adjustment-mechanism-regulation](https://european-aluminium.eu/news_events/cru-study-assessment-of-european-carbon-border-adjustment-mechanism-regulation) (accessed on 25.01.2024).

will worsen the situation for automotive component manufacturers in the EU.

3. Risks of accelerating unemployment growth in the EU. Increased costs for European automakers due to the introduction of CBAM will worsen the competitiveness of EU countries and accelerate the growth of unemployment associated with the phasing out of internal combustion engines in favor of electric motors. In general, transportation by electric trains is more efficient and competitive than transportation by internal combustion engine trains, largely due to the lower production costs and greater efficiency of the former. A locomotive with an internal combustion engine consists of more than 2000 components, and a locomotive with an electric motor consists of 20 components. In addition, the production of an electric train requires 70% less labor than the production of a train with an internal combustion engine. Due to the greater competitiveness of electric train transport in the EU, demand for cars is expected to fall further as rail transport continues to displace personal road transport. Reduced demand for cars will lead to job cuts in auto companies and increased unemployment in the EU. These negative effects will be exacerbated by the introduction of CBAM.<sup>25</sup>

CBAM will cause a sharp increase in prices for fertilizers in the EU, which will lead to a decrease in the competitiveness of the agriculture sector of the bloc.<sup>26</sup> An additional factor weakening the bloc's agriculture may be the rise in the price of agricultural machinery due to the introduction of CBAM. As noted in the official December 2021 statement of the European Agricultural Machinery Association (CEMA), "steel is a critical raw material for our industry. Depending on the type of product produced, it takes up 30–40% of its cost. A sharp increase in steel prices will weaken our industry, and will also worsen the situation for farmers, for whom our products will become more expensive".<sup>27</sup>

<sup>25</sup> Carbon Border Adjustment Mechanism. European Association of Automotive Suppliers. November 2021. URL: <https://clepa.eu/mediaroom/clepa-position-paper-on-carbon-border-adjustment-mechanism> (accessed on 25.01.2024).

<sup>26</sup> Position on a Carbon Border Adjustment Mechanism, especially for fertilisers. Deutscher Bauernverband. December 2021. URL: [https://www.bauernverband.de/fileadmin/user\\_upload/dbv/pressemitteilungen/2021/KW\\_41\\_bis\\_KW\\_53/KW\\_50/27021\\_Position\\_on\\_Carbon\\_Border\\_Adjustment\\_for\\_Fertiliser\\_final\\_8\\_Dec\\_2021.pdf](https://www.bauernverband.de/fileadmin/user_upload/dbv/pressemitteilungen/2021/KW_41_bis_KW_53/KW_50/27021_Position_on_Carbon_Border_Adjustment_for_Fertiliser_final_8_Dec_2021.pdf) (accessed on 25.01.2024).

<sup>27</sup> CEMA Position Paper on the Carbon Border Adjustment Mechanism. December 2021. URL: [https://www.cema-agri.org/images/publications/position-papers/CEMA\\_Position\\_on\\_CBAM\\_2021.pdf](https://www.cema-agri.org/images/publications/position-papers/CEMA_Position_on_CBAM_2021.pdf) (accessed on 25.01.2024).

In addition, a number of scientific studies [13, 14, 18–25] indicate that the CBAM initiative contains numerous vulnerabilities. The main vulnerabilities of this initiative are as follows:

- CBAM contradicts the provisions of international law (UN Framework Convention on Climate Change, Paris Climate Agreement, GATT, WTO Agreements) [21–23];
- CBAM exacerbates existing inequalities between countries, shifting the economic burden of climate policy costs from countries using CBAM to those that do not use it [13]. This contradicts Paragraph 1 of Art. 3 of the United Nations Framework Convention on Climate Change, according to which "the Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities"<sup>28</sup>;
- CBAM does not contain a well-developed methodology for calculating the "carbon footprint" of imported goods [21, 22, 24];
- CBAM may be inconsistent with other government policy goals [14];
- CBAM has all the signs of discrimination, protectionism, and restriction of competition in the environmental and production spheres in relation to exporters [25].

One of the most significant vulnerabilities of the CBAM is the presence of a number of its contradictions with the provisions of international law.

1. Contradiction of the CBAM with the United Nations Framework Convention on Climate Change. According to Paragraph 1 of Art. 3 of the UNFCCC, "the Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities". CBAM shifts the economic burden of climate policy costs from countries using CBAM to countries that do not use it [13].

2. Contradiction of CBAM with the provisions of the Paris Climate Agreement on global climate efforts of countries on the basis of common but differentiated responsibilities and respective capabilities

[org/images/publications/position-papers/CEMA\\_Position\\_on\\_CBAM\\_2021.pdf](https://www.cema-agri.org/images/publications/position-papers/CEMA_Position_on_CBAM_2021.pdf) (accessed on 25.01.2024).

<sup>28</sup> UN Framework Convention on Climate Change. Accepted on May 9, 1992. URL: <https://unfccc.int/resource/docs/convkp/conveng.pdf> (accessed on 25.01.2024).



considering different national circumstances (Preamble and Paragraph 3 of Art. 4 of the Agreement).

3. Contradiction of CBAM with Paragraph 15 of Art. 4 of the Paris Agreement, which expresses concerns with the problems of the Parties “with economies most affected by the impacts of response measures, particularly developing country Parties”.

4. Contradiction of CBAM with Art. III of the GATT. In accordance with Paragraph 4 of Art. III of GATT 1947, the products of the territory of any contracting party imported into the territory of any other contracting party shall be given treatment no less favorable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use (the introduction of CBAM is likely to place carbon-intensive goods in a better position than low-carbon-intensive goods).

5. Contradiction of CBAM with Paragraph 1 of Art. XI of GATT 1947 and WTO rules, which do not allow, among other things:

(1) discrimination between imported goods and goods of domestic origin;

(2) hidden restrictions on international trade.

In case of identified non-compliance and non-compliance with WTO recommendations and decisions, one of the temporary measures may be applied to the violator:

- compensations;
- retaliatory measures (suspension of concessions or other obligations) in accordance with Paragraph 1 of Art. 22 of the Understanding on Rules and Procedures Governing the Settlement of Disputes of April 15, 1994.

Due to the above risks and vulnerabilities, which determine the counterproductivity of the CBAM, the EU faces the challenge of reviewing and adjusting this mechanism. In this case, the CBAM needs to be adjusted, taking into account the positions of the main subjects of the global economy (Russia, EAEU, China, India, Brazil, South Africa, Argentina, Egypt, Iran, United Arab Emirates, Saudi Arabia, Ethiopia, USA, EU, Republic of Korea, etc.).

### Conclusion

The results of the study show that the modern climate policy of the EU is a logical continuation of the implementation of the Marshall Plan to establish US domination over European countries with the aim of deindustrializing them. As a result of the implementation of this counterproductive policy that is contrary to the national interests of the member states, the EU is experiencing stagflation, quickly losing its competitive position in the global economy. In this new reality, the EU faces the challenge of reviewing and adjusting climate policy in the region.

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# Exploring Work-Life Balance among Women Entrepreneurs of Food Vending Business in Africa

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## ABSTRACT

Women engaged in street food vending face a myriad of challenges as they juggle business activities and family obligations. The complexities of managing both spheres often disrupt their pursuit of a balanced life, impacting their overall well-being. This study **aims** to reveal the work-family dynamics of female food vendors and uncover the strategies employed to navigate these challenges. Qualitative research **methods** were used to understand the work-life balance among women food vendors. The **data** were collected through interviews, focus group discussions, and observations of street food vendors in Africa. **Findings** reveal the persistent struggle of women food vendors to achieve equilibrium between work and family responsibilities. Although they employ a variety of strategies, ranging from working extended hours to relying on external support such as grandparents or domestic help, these approaches often prove insufficient and unsustainable. Moreover, the utilization of such strategies can lead to conflicts with employers. Through an examination of daily routines, work-life balance, and coping mechanisms, the author's **conclusions** shed light on the intricate interplay between entrepreneurship, personal responsibilities, and resilience within the dynamic street vending landscape.

**Keywords:** street vendors; informal economy; work-life; work; family; women; food vendor; Africa; Tanzania

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ОРИГИНАЛЬНАЯ СТАТЬЯ

# Исследование баланса между работой и личной жизнью женщин — продавцов продуктов питания в странах Африки

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## АННОТАЦИЯ

Женщины, занимающиеся уличной торговлей едой, сталкиваются с множеством проблем, совмещая деловую деятельность и семейные обязанности. Сложности управления обеими сферами часто нарушают их стремление к сбалансированной жизни, влияя на их общее благополучие. **Цель** данного исследования — выявить динамику отношений между работой и семьей у женщин — продавцов еды и раскрыть стратегии, используемые для преодоления этих трудностей. Для изучения баланса между работой и личной жизнью среди женщин — продавцов продуктов питания были использованы качественные **методы** исследования. Данные были собраны посредством интервью, обсуждений в фокус-группах и наблюдений за уличными торговцами едой в Африке. **Результаты** показывают постоянную борьбу женщин — продавцов продуктов питания за достижение баланса между работой и семейными обязанностями. Хотя они используют различные стратегии, начиная от работы сверхурочно и заканчивая привлечением внешних помощников,

таких как бабушки и дедушки или домашняя прислуга, эти подходы часто оказываются недостаточными и неустойчивыми. Более того, использование таких стратегий может привести к конфликтам с работодателями. Благодаря изучению распорядка дня, баланса между работой и личной жизнью, а также механизмов преодоления трудностей, **выводы** автора проливают свет на сложное взаимодействие между предпринимательством, личными обязанностями и жизнестойкостью в динамичном ландшафте уличной торговли. **Ключевые слова:** уличные торговцы; неформальная экономика; баланс работы и жизни; работа; семья; женщины; продавцы еды; Африка; Танзания

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## Introduction

This research focuses on understanding how women food vendors strive to achieve a good balance between work and family commitments. Work-life balance is becoming an important field in management sciences, yet unpopular in the informal sector. Work-life balance is the equilibrium between needs for work and an individual's life [1]. It is about a struggle for the balance between work-family and work-life. Reconciling work and family demands is difficult, and balance between them is achieved only when work affairs do not substitute home or family life and vice versa [2]. Women are more likely to be affected negatively by a work-life balance than men due to household responsibilities [1]. Women working in the informal sector are more likely to fail to balance work and life, given their poor working conditions [3]. Unlike in the formal sectors, people in informal businesses have a poor payment system, they do not have formal working hours or job descriptions.

Work-life balance studies are important in the street vending business given the proliferation of informal trading activities around the world. Work-life balance has long been a concern for those interested in the quality of one's working life and its relationship to one's overall quality of life. The increased interest in work-life balance research reflects a perception that this is an agenda worth investigating and is an issue of contemporary interest [4]. Work-life balance is one of the most important aspects that human resource managers must consider in the contemporary working environment [1]. Although important, little is known about the work lives of street food vendors. There is a paucity of research on work-life balance in the informal trade sub-sector. Most of the available research on street food vending businesses focuses on social economic aspects, challenges, motivations, and

connections with formal businesses [5–9]. To our knowledge, this is the first research to address the work-life balance of street food vending in Africa.

A food vending business can be defined as a process of cooking, distributing, and selling foods, vegetables, fruits, and drinks on the street [6]. Food vendors sell diverse types of foods cooked on the street or brought from home. The main buyers of street food are poor, low-income earners, wage laborers, students, pupils, and travelers [10]. People buy street food because of convenience, low prices, and flexibility [3]. However, low-priced food vending businesses are criticized for poor food hygiene, a lack of safety, deceptive practices, and foodborne illnesses like mild diarrhea and food poisoning [11]. Many women are employed and/or invested in street food vending businesses due to ease of entry (no interview, no need for schooling certificates, no need for experience) [12]. Street food vending is a very flexible business since one can change anything anytime. Street food vendors can change location, menu, and working hours, and others will have a few negative effects. The street food vending business in Africa is primarily women's work [13]. Research shows that street food vendor working conditions in Tanzania are characterized by poor working conditions, e.g., informality, low pay, pay uncertainty, long working hours, a poor physical environment, a lack of training, employment insecurity, a lack of legal recognition, an unclear legal standing, and a lack of social security and protection.

Street food vending is a source of employment and income for poor African women [9]. The revenue from the food vending business is used to pay for health, education, accommodation, and self-development, hence economic growth [14]. It plays a big role in poverty reduction, improving the quality of living and reducing government burdens [7]. Food vendors supply low-priced and nutritious

food for poor urban students, travelers, and wage workers who cannot afford formal restaurants price. Mobile food vendors offer their services to people working in remote areas, e.g., construction sites and mining areas, where formal restaurants are unavailable.

In many countries, the street food business is not subject to formal regulations exercised by either local government authorities or national authorities or agencies, hence becoming victims of evictions, asset confiscations, fines, and sometimes jail sentences [8]. Food vendors are informal in that their job is unprotected; they have excessive regulation from the local authority, low productivity, unfair treatment, do not adhere to labour laws or payment of tax, are involve in underground or shadow operations, and have unclear legal status [15]. Since street food vendors are informal workers, they are subject to long working hours, evictions, confiscation of their products, not being covered by social and health security funds, difficult working environments with unclear labour laws, and sometimes discrimination from formal business owners [16]. Food vendors lack the necessary skills, knowledge and technical know-how to handle the food hygienically and make their businesses competitive [17]. In addition, food vendors lack the money and assets necessary to start and run the business profitably [9]. Little finance means diseconomies of scale, less exploitation of full opportunities, and limited business growth. Street food buyers perceive different risks like hygiene, health, unsanitary utensils, absence of handwashing, improper food storage conditions, ingredients, and improper waste management [18]. Women's street food vendors are also constrained by work-life balance conflict. Women experience many challenges when trying to find a balance between work and family lives due to cultural factors, insufficient time, family roles, gender biases, and the nature of their work [19].

The focus of this research is to explore: What does a street food vendor's typical day look like? What is the work-life balance features of street food vendors? How do street food vendors strategize to balance work and life?

### **Literature review**

Food vendors are available both in poor and developed countries; for example, food vending is estimated to be a \$ 20 billion industry in the United States [20]. In Japan, street food stalls

contributed to about 190 million [21]. All over the world, there is a shift towards eating foods prepared outside (away) from home, creating motives for starting food vending [22], including the street food business. Street food vending is the most visible of the informal economy and has been an important income-generating activity, particularly for the poorer urban residents in many developing countries [23]. Millions of people use street food daily because they work far away from their homes, and the vendors offer a wide variety of foods at a low cost and are easily accessible. Street food buyers are youth, students, travellers, children, adults, couples, singles, and low-income earners [10]. Street food vending assures food security for low-income urban populations and offers an opportunity for developing small-scale entrepreneurs. No matter how small-scale the business, street food vending provides employment, income, and food security, empowering millions of poor, less educated, and women in general [24]. The income generated from food vending is used to pay rent, school fees, health services, shelter, and clothes, hence fighting against poverty [5].

Like other informal workers, food vendors operate outside the legal system, and their businesses are not formally registered like formal restaurants. Lack of formal registrations denies their right to access public services such as training, finance, social and health security, and other development assistance [12]. Furthermore, urban food vendors lack entrepreneurial skills and business education to make their businesses competitive and sustainable [25]. All these limitations make the urban food vending sector a "survivalist business", daring to survive nor to grow and having little or no significant impact on economic growth, which it actually has [26]. Therefore, in this research, we expect to add to the body of knowledge on modernizing the urban food vending sector to make it inclusive for poverty alleviation and economic growth.

Work-life balance in the informal sector has attracted the attention of different scholars [27–29]. Most studies concluded that work-life balance affects the performance of informal sector activities [2, 19, 29]. They see that work-life balance can affect positively or negatively healthy family affairs, social networks, and the general life of informal workers [30]. A study in South Africa [31] revealed that girls and women employed in the informal sector have



work-family fit and therefore require attention like their counterparts in the formal sector. Research [32] in Tanzania sees women as the most victims of work-life imbalance, given their responsibility to raise children, care for the family and cook, as backgrounded by African culture. Another research in Kerala, India, shows an imbalance between the work and life of unorganized women due to insecurity, long working hours, and lower wages [33]. Scholars worldwide have confirmed the positive relationship between good working conditions and business success and employee well-being [2, 4]. Working conditions significantly correlate with better self-assessed and objective health [12]. Poor work-life balance causes material and human losses, reduces productivity, and impairs workers' health and well-being [30]. The 2019 World Employment and Social Outlook (WESO) shows that around 3.3 billion people employed globally in 2018 had inadequate economic security, material well-being, and equality of opportunity, hence a difficult work-life balance [34]. Sub-Saharan Africa is the most vulnerable in the world, where 70% of employees are in poor working conditions with limited access to social protection, low earnings, the absence of job contracts, and so on [35].

Work-life balance in formal business differs from the street vending business, which is a typical family-owned or sole proprietorship undertaking. Family and sole proprietorships have no formal policies, regulations, or procedures like formal enterprises. Research [36] on women entrepreneurs in the Philippines revealed three strategies applied to balance work-life activities: having the business located at or close to the living area, participating in stress-relieving hobbies, and scheduling work and domestic duties in advance. Furthermore, the women entrepreneurs in the Philippines use other strategies such as information gathering, goals or objectives setting, and systematic planning, monitoring and control. A study by [37] recommended that women entrepreneurs improve their work-life balance by adopting modern, innovative work-life balance strategies such as adding support from spouse and family, stress management activities, and redesigning workflow to make it more flexible. Goal setting, seeking and using information properly, good planning and monitoring, effective time management, and forging activities to bring together the family.

### Research methodology

The study was carried out in the Mbeya district in the wards of: Forest, Ghana, Iduda, Iganjo, Iganzo, Igawilo, Ilemi, and Ilomba. The rationale for selecting the Mbeya district lies in the fact that it is the fastest-growing city in Tanzania, dominated by women street vendors. As per the Tanzania National Center (2022), the Mbeya region had 229,056 women compared to 217,280 men. The study adopted a qualitative research approach to understand the work-life balance among women food vendors. Qualitative data were collected through in-depth interviews and focus group discussions. The qualitative approach is relevant given its ability to provide an in-depth understanding of complex issues and insights into the settings and activities of the research participants under review, hence providing the research with an opportunity to gain sensitive insights into multiple realities, experiences, and interactions of individuals and groups.

There were five focus discussion groups (FGDs), each of which was composed of eight participants, or 40 individuals in total. FGD meetings were held at Ward Executive offices located in each ward. Respondents were selected randomly from the list of street food vendors provided by the Ward Executive Officers. The respondents were informed in advance (two days before the meeting), allowing them to schedule their businesses. Three interviewers were present at the meeting, and all audio was recorded with the consent of the respondents. FGDs aimed at answering the key research questions: What does a street food vendor's typical day look like? What are the work-life balance features of street food vendors? How do street food vendors strategize to balance work and life?

In-depth interviews were conducted with selected women's food vendors. Selection criteria were having more than five years of experience, being a leader in food vending informal groups, and women who found doing business together with children. Interviews were conducted just near their business area to allow convenience and flexibility for respondents. Interviews were carried out in the evening when the number of customers was few and some of the businesses were already closed. The interview lasted for 15 to 25 minutes. The focus of the interview was to answer the key research questions for this study. A total of 12 interviews were conducted and reached data saturation, hence no need to go for more interviewees.



Qualitative data, tape recorders, and notebooks were used to collect and, later, generate data for analysis. After every interview, the researchers reflected on the relevance of the information generated against the critical decisions that were made based on that information. Finally, a quick preview was done to see how the themes responded to the research questions and objectives and to identify overarching patterns and conclusions. The consultant took note of any contrasts among sources and, lastly, highlighted the information that answered the research questions.

### Research findings

#### *What does street food vendor day look like?*

Urban vendors reported waking up early in the morning, around 04:00 a.m. to 06:00 a.m. They must wake up very early in the morning to perform family responsibilities before going to work. Most of the respondents have phone alarms to remind them when to wake up. Women vendors start by preparing breakfast for children to go to school. Children's preparation includes ironing clothes, bathing, preparing their breakfast, checking their exercise books, and making sure they go to school. When they wake up, they go to suppliers or markets to buy merchandise for cooking. Usually, at such a time, there is no public transport; therefore, they use motorcycles, walk-in groups, or hire commuter buses to pick them up (which is expensive). After getting the stock, some vendors go back home to undertake family activities, others go directly to businesses; while others, e.g., fish soup sellers, go to prepare it. The interviews revealed that the time for opening businesses differs from one category of vendors to another; bus stand vendors, city center vendors, and breakfast sellers start businesses from around 05:00 a.m. to 06:30 a.m. Most of the mobile food vendors start from 10:00 a.m. onwards. Most of the women vendors start businesses late because they need to settle family matters first.

The interviews with urban vendors who start businesses at around 04:00 a.m. revealed many risks they encounter. These include walking with cash, which is very dangerous for them. They reported knowing some of their friends who were robbed of their money and mobile phones by thieves. Also, leaving the family, including children, asleep is not appealing because they may not know whether the children will wake up okay or not. Other women

vendors claimed their husbands do not like to see them leaving early in the morning, hence leading to unnecessary conflicts. Observations found several children during the weekend and early evening helping their parents sell products. Some women and men help their partners conduct business when there is an emergency like funerals, ceremonies, sickness, etc. (this applies mostly to stationary vendors). Some vendors change their selling locations depending on the time. Women vendors prefer to sell near their homes in the evenings to enable them to undertake family activities while in business. It is common to find vendors displaying their cooked food at their doors in the late evenings.

The research revealed that all street traders do business every weekday, including Saturdays and some categories on Sundays. Food vendors, bus stand vendors, and near-marketplace vendors are examples of Sunday vendors. The interviews with Sunday vendors revealed that lack of sufficient sales during the week, a low level of competition during Sundays, low supply from formal shops on Sundays, access to the church population on Sundays, and family factors (children do not go to school on Sundays) are the reasons for doing business on Sundays. On the other side, those who do not do business on Sundays mentioned a lack of customers, the need to rest with families, and Sunday worship (going to church) as the main reasons. Most of the urban vendors close businesses from 06:30 p.m. to 10:30 p.m. Darkness, security, distance from home, family responsibilities, nature of businesses, and availability of public transport are among the factors that determine what time to close the businesses. It was reported by various groups of vendors that they walk to their home places, which are located around 3 kilometers from their businesses.

#### *How do women food vendors balance working and family responsibilities?*

Different interviews were carried out during hours spent at food vending in a day, Interviewee 1 stated that.

"I arrive here at around 5 am and work for the whole day, times I go home at 9 pm".

Generally, the study findings indicate that most women food vendors in Mbeya spent nine hours, followed by 12 hours, at food vending a day, depending on the magnitude of family responsibilities that they had to meet on that particular day. Most food vendors started work as early as 5 am or 6 am offering breakfast to their customers, and yet by 9

pm, some could be seen still working despite being through a hectic day. This implies that women work long hours, leaving them in a position where they lack adequate time to fulfill their family responsibilities because they are overwhelmed by their productive role. They also indicated that the few hours after work are meant for family chores. This is contrary to the ILO Convention (No. 1) of 1919, which requires working hours to be limited to eight hours a day and forty-eight hours a week.

Street food vendors are one of the groups of people who work excessive hours. Some street food vendors' kiosks never close. They work for 24 hours a day (on a shift basis). At the bus stand, near hospitals, train stations, and near nightclubs' vendors work until morning. This is not surprising in Tanzania, Universally Street vendors work for many hours; in Mumbai, for example, the majority of vendors work for 10 hours [38], 8–12 in New Delhi, and in Bangkok, they work all hours of the day [35], and so on. Street food vendors do like to work such long working hours, as they need more income; therefore, they believe that if you add more working hours, your earnings will increase. Any attempt to cut off working hours will result in income loss, hence the negative consequences for their household. Long working hours have several self-rated health risks: low productivity, poor performance, stress, a lack of free time, and poor work-life balance. These findings suggest a need to educate food vendors on better time management, given the long-run effects of long working hours.

The study findings show that the majority of women food vendors carry out some family responsibilities while food vending. During the interviews, we saw some women food vendors breastfeeding their babies as they carried on their food vending chores. The interviews revealed that some vendors pick up their children from school or bus stands and stay with them until they close business. We observed some of the food vendors assisting each other to make hair while waiting for the customers. Some food vendors could buy food at markets or shops while waiting for the food to be ready for serving. Generally, food vendors do some activities while vending. This can be witnessed by this statement from the respondent.

“Yes, I try my best, but since I am a widow, I am challenged so hard to work because I am the father and mother to my children. My sweat is what feeds, treats, and takes them to school. I do work near my

home, so I run home a bit during the daytime to check on my elder children”.

Street vending is the most flexible form of microbusiness in Tanzania. It allows vendors to do other family responsibilities while vending. These flexibilities allow vendors to undergo other economic activities. The research in Dodoma [16] found some urban vendors who go farming during rainy seasons (December to March) and then back to urban vending from April to November. Research in Dar es Salaam found part-time urban vendors (at night they are security guards, and during the day they are urban vendors).

Several respondents reported sending their children to stay with grandparents in the village to give them a room for business. They have decided to send their children to grandparents who live in rural areas. One respondent stated that “I live alone; my two children are in the village, living with my father”. Grandparents (mostly in rural areas) who are mostly farmers will take care of the children by ensuring that they get food, school, and shelter. Each month, they send part of their income to grandparents to help care for their children. The interviewees reported that in the village, the cost of raising the children is low, mentioning bus fare, utilities, and food as examples. The analysis shows that the children sent to the village are those older than two years. This is a kind of urban-rural migration of children. Parents do not like living without their children; however, for the sake of employment demand, they send them to rural areas to live with their grandparents. Children being cared for and raised by grandparents is not new; in 2011, 7.7 million children lived in the same household as at least one of their grandparents in the United States of America. Several advantages come from living with grandparents, including the physical health of kids, knowing the native language, imitating cultural, moral, and good care. Additionally, grandparents are not busy as much as youth in urban areas, so there is more time to look after the children. Some drawbacks relating to grandparents raising children include a lack of resources to care for children, the inability to make children follow up at school, difficulty cooking, stress, and poverty in rural areas [39].

Several respondents reported paying co-workers to assist in doing what they were supposed to do when absent. This strategy is common among employed food vendors. If you leave the work site

before office closing hours, you need to get someone to care for your assignments; therefore, you have to pay for them. Interviews with respondents revealed that payments are made if someone does not come to the job, if arriving late, if they leave the office before closing hours, if they walk out for some family issues. The payment ranges from 0.3 USD to 0.5 USD, depending on the number of hours. Street food vendors do not like to take part of their income to pay others; however, they have to do so for the sake of work-life balance. Using co-workers to support balancing work and job was also observed by [39], though there was no payment. This can be confirmed by this respondent.

“Yesterday I was not here; I went to the hospital; my child was sick. I paid my co-worker 1500 Tanzanian shillings to help me wash dishes”.

Another strategy to balance work and family responsibility is to do some job work at home or do some home activities at work. The interview found some women sorting beans and rice, cooking snacks at home, and then bringing them to the vending kiosk. Our observation found women washing clothes and making hair and nails at work (activities supposed to be done at home). They reported doing this because of work-life balance difficulties. This is what [19] called (work-to-family versus family-to-work). During the interviews, we found some women preparing green vegetables to be cooked when they got back home. There are work demands and, at the same time, family demands on the same employee, hence work-life conflict. Women’s food vendors are using this strategy to reduce work and family stress.

Some street food vendors reported hiring housemaids to assist with family activities. Housemaid activities involve cooking, washing dishes, cleaning the house, and caring for children. Street food vendors reported paying between 15 and 25 USD for this service per month. Low-income food vendors do not use this strategy because it is too expensive when compared to their monthly salary. Hiring housemaids is a common strategy among employees in Tanzania, particularly those with kids. Some food vendors reported working seven days a week, with no public holiday. They do not have holidays because they want to earn more. They do not want to miss a cent. They do not have much money. Employees in food vending report to work over weekends and public holidays to compensate for the hours used for family care (late arrival, leave

before closing hours). Some respondents reported seeking assistance from relatives and neighbors to help them with some family issues, e.g., opening the door when children come back home from school, fetching water, giving children food, and others. Some respondents reported living with relatives, e.g., aunt, nephew, sisters, and brother to help them perform family responsibilities while on the job. Several respondents reported setting limits on assignments to be accomplished within a given period. If more activities remained unattended up to that time, they should have been postponed. This can be witnessed by one respondent in the city center. “You can’t do everything; some activities need to wait”.

The interviews revealed home activities such as washing clothes, sweeping the ground, cleanliness, and visiting neighbors and relatives as the most postponed activities. Some of the home activities that couldn’t be postponed were cooking, dishwashing, childcare, school affairs, and health-related activities. At work, the most postponed activities were cleanliness. Prioritizing and limiting activities (mostly nonessential activities) were also seen by [40]. Other respondents reported that.

“We need to set limits for the job and home activities; if you don’t set limits, then you will find yourself with no time for relationships and private affairs”.

Among the unethical work-life balance strategies used by street vendors is work absenteeism. Research finds that several vending employees do not appear at work without prior approval from their employers (an unreasonable and frequent absence from work). When they have excessive family responsibilities and can’t get permission from their employer, they decide not to go to work. This strategy is mostly used by women with kids, adults, and other vendors with some health problems. The interview with street vendors revealed that they do not know the long-run effects of work absenteeism. Repetitive work absenteeism reduces productivity, employee trust, quality of services, and work motivation, and causes conflicts and dissatisfaction with the employer [41]. Street food vendors do not like to appear to have a job; however, family activities force them to do so. This can be witnessed by this statement from the respondent.

“What should I do? My son is sick; my boss does not want to permit me, then I will not go to the job until my son is fine”.



Leave the working site even if they finish their responsibilities on time. Some respondents mentioned staying in their jobs even after normal hours if there was unsold food. Time management is an important strategy for achieving work-life balance and has been proven to be effective [42]. Some employees mentioned hard work, doing the right things at the right time, and commitment to the job and home to ensure a good work-life balance. They utilize the time they have efficiently. They do not lose even a minute. They do some assignments in advance; for example, they mentioned cleaning dishes as they come (do not accumulate). Hard work, commitment, time management, and doing things in advance enable them to finish their responsibilities on time, hence maintaining a good work-life balance.

### Discussion and recommendations

Street food vending is an important employment opportunity for the less educated, poor, and women in the developing world. It is a source of income, low-priced food, market heterogeneity, and urban safety. Given the decline in formal employment, the increase in poverty, and urbanization, street food vending will continue to serve its purpose. Women (whether employers or employees) dominate street food vending; therefore, it is important to understand their work-life balance. However, many people, including policymakers, politicians, and the public, consider street food vendors a nuisance, troublemakers, and a rudimentary economy. Understanding street food vendors' work-life balance strategies is crucial to empowering them. Government authorities and development partners can use the findings of this study to design intervention strategies for improving street food vendors' work-life balance.

Street food vendors have the right to serve their families the same as other human beings. They need time to care for their families, rest, and enjoy life. However, they cannot; vending activities have already occupied their time. Any attempt to reduce vending hours ultimately results in low sales, hence the loss. Street vendors' initiatives to balance life and business have posed them with risks such as little sleeping hours, leaving children alone, thieves, and the risks of having children raised by grandparents. Little sleeping hours adversely affect street vendors in the short and long run. Poor work-life balance affects both women's and

men's vendors. It is associated with a decrease in productivity and a lot of overtime, hence tiredness, stress, burnout, emotional disorder and physical exhaustion, absenteeism, sickness, and employee turnover. Generally, the health of street food vendors is at risk due to poor work-life balance. Their job motivation, satisfaction, and sustainability are jeopardized by poor work-life balance.

What does a street food vendor's typical day look like? The findings are interesting. Women's food vendors are busily occupied by trading and family activities all day. There is no time to rest. They do not like to be occupied in such a way; however, it is their survival strategy. They have only 24 hours for everything (therefore, time is a limited resource), hence a call for opportunity costs to decide what, how, where, and when to do. This is in line with the words of a vendor [43], who saw time as the scarcest resource because, without it, nothing else can be controlled. Nothing else can be managed until we can manage time. Therefore, street food vendors should manage the time they have, not the activities they are required to accomplish. Excessive working hours are bad for the health and safety of workers. Negative effects like job dissatisfaction, mental health disorders, divorce, and multimorbidity are usually associated with long working hours [44]. Analysis of informal workers working hours by [45] revealed that they work excessive hours in difficult and unsafe working conditions, however, they are still poor. Female workers reported having more time demands than men.

Although trading activities occupy much of street food vendors' time, they don't ignore their families, particularly children. This is what many work-life balance researchers refer to as work-life conflict [46]. The struggle to balance brings several risks to street food vendors. A study by [7] in Accra, Ghana, confirmed that women's food vendors have several social and family responsibilities, that consume much of their trading time. Women are responsible for the majority of unpaid home affairs as well as caring for children, the elderly, and the sick. These women would experience role conflict when the simultaneous presence of these two sets of forces, hence became incompatible with one another. Attaining a successful work-life balance has proven to be both unachievable and stressful. Work-life conflict (formerly known as work-family conflict) is a type of life imbalance caused by time restrictions between work and family or general



life roles. When this happens, traders' ability to participate in both aspects of life becomes more difficult. When the energy, time, and behavioral demands of the workplace begin to conflict with family or personal life roles, this type of conflict arises.

Women food vendors leave their houses early in the morning and go back home late at night seven days a week. Walking at night and leaving the house and children alone at home brings risks. In Tanzania, particularly in cities like Mbeya, violent armed robbery, petty theft, and threats of violence are prevalent. Although Tanzania is a peaceful country, regular reports from police officers show victims of mugging and bag snatching (especially by-passing cars or motorbikes) and armed robbery and burglary throughout the country. One of the risk minimization strategies is to ensure the risks, which is impossible for street vending because of the informality. This calls for further research to establish how to minimize business risks for informal traders.

Modernizing street food vending entails a multifaceted approach that combines innovation, technology, and community engagement. Firstly, embracing digital platforms can revolutionize the way street food vendors operate. Developing mobile applications for ordering and payment, as well as leveraging social media for marketing and customer engagement, can significantly enhance visibility and accessibility. Additionally, implementing digital inventory management systems and analytics tools can optimize supply chain logistics and inform decision-making processes, leading to more efficient operations and reduced food waste. By embracing digital solutions, street food vendors can streamline their processes, attract a broader customer base, and stay competitive in an increasingly digital marketplace. Furthermore, fostering collaboration and partnerships within the community can further modernize street food vending. Initiatives such as food hubs or collective kitchens, where vendors can share resources, knowledge, and infrastructure, can promote innovation and sustainability. Moreover, collaborating with local governments to create designated street food zones with proper infrastructure and regulations can enhance safety and sanitation standards while preserving the vibrant street food culture. Engaging with local communities through events, pop-up markets, and food festivals can also create opportu-

nities for exposure and growth. By building strong networks and partnerships, street food vendors can collectively modernize their operations while preserving the authenticity and cultural richness of street food.

To support women food vendors, government policies should focus on creating an enabling environment that addresses the unique challenges faced by women in starting and growing businesses. This includes implementing targeted financial assistance programs such as grants, loans, and venture capital specifically earmarked for women-owned businesses. Additionally, establishing mentorship and networking initiatives to connect women food vendors with experienced mentors, industry experts, and potential collaborators can provide invaluable guidance and support. Furthermore, implementing policies that promote work-life balance, such as subsidized childcare and flexible working arrangements, can help alleviate some of the challenges women face in balancing entrepreneurship with family responsibilities. By actively promoting gender equality and implementing supportive policies, governments can empower women entrepreneurs to thrive, driving economic growth and fostering innovation.

Women food vendors in Mbeya have adopted strategies to balance street food vending and family responsibilities. Their strategies are effective but not sustainable. Some work-life balance strategies, e.g., work absenteeism, are unethical and have long-run effects on street food vendors and their employees. Some strategies taken by food vendors, e.g., vending with kids or walking out at midnight or earlier in the morning, are also risks to the vendors. Street food vendors use their little income to facilitate work-life balance, e.g., hiring house cleaners or compensating their co-workers. In general, street food vendors do not have a sustainable solution for work-life balance. Some street food vendors have despaired and waited for nature to decide itself. However, they need to be informed of the importance and alternative strategies for balancing work-life demands. The work-life balance dilemma is not only a topic of concern to food vendors but also affects even the formal sector, however, the magnitude differs. Formalizing a street vending business can be an important step towards empowering street vendors and assisting them in balancing work and family.

## Conclusion

Delving into the typical day of a street food vendor sheds light on the intricacies of their work-life balance. Street food vendors navigate a dynamic and demanding environment where each day presents unique challenges and opportunities. Despite the long hours and physical demands of the job, many vendors find fulfillment in their work, fueled by a passion for cooking and a sense of entrepreneurship. However, achieving a harmonious work-life balance remains a constant challenge for street food vendors, who must juggle the demands of their business with personal responsibilities and aspirations. To nav-

igate this delicate balance, street food vendors employ various strategies, including efficient time management, prioritization of tasks, and leveraging social support networks. By adopting these strategies and adapting to the ever-changing landscape of street vending, vendors strive to carve out moments of respite and enjoyment amidst the hustle and bustle of their daily routines. Ultimately, understanding the work-life balance features of street food vendors underscores the resilience and resourcefulness inherent in their profession, while also highlighting the importance of supportive policies and initiatives to facilitate their well-being and success.

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# Does Gender Define Access to Microcredit? Evidence from India

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## ABSTRACT

**The aim** of this research is to examine the influence of gender on the accessibility of microcredit for small and informal business owners in Nagaland, India. In addition, the study conducts a region-wise comparative analysis of the loans disbursed to self-help groups (SHGs) by banks. Using primary data obtained from a cohort of 205 small business proprietors within the state, the study used the **methods** of descriptive statistics and econometric analysis. Furthermore, the paper employed the logit model to examine key factors such as firm size, SHGs and the qualifications of the entrepreneurs, along with gender. The secondary data, obtained from the Centre for Monitoring Indian Economy and the National Bank for Agriculture and Rural Development, allow the study to conduct a comparative analysis using the percentage share approach. **The results** reveal that public sector banks disbursed the highest amount of loans to SHGs, and the comparative analysis indicates that SHGs in the North-Eastern Region of India have the lowest share of savings with banks. Based on the empirical analysis, the author **concluded** that firm size, financial services provided through SHGs, educational qualifications, and gender of small business owners play a significant role in the accessibility of microcredit from financial institutions.

**Keywords:** microcredit; microfinance; women entrepreneurship; gender; banks; firm size; access to finance; econometrics; India

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ОРИГИНАЛЬНАЯ СТАТЬЯ

# Определяет ли гендерный фактор доступ к микрокредитам? Эмпирический анализ из Индии

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## АННОТАЦИЯ

**Целью** данного исследования является изучение влияния гендерного фактора на доступность микрокредитов для владельцев малого и неформального бизнеса в провинции Нагаленде, Индия. Кроме того, в исследовании проводится сравнительный анализ кредитов, выданных банками группам взаимопомощи (ГВП) в зависимости от региона. Используя первичные данные, полученные от группы из 205 владельцев малого бизнеса в штате, в исследовании использовались **методы** описательной статистики и эконометрического анализа. Кроме того, в исследовании использовалась логит-модель для изучения таких ключевых факторов, как размер фирмы, наличие ГСП и квалификация предпринимателей, а также их пол. Вторичные данные, полученные от Центра мониторинга экономики Индии и Национального банка сельского хозяйства и развития сельских районов, позволили провести сравнительный анализ с использованием метода процентных долей. Результаты показывают, что банки государственного сектора выдали наибольшую сумму кредитов ГСП, а сравнительный анализ показал, что ГСП в Северо-Восточном регионе Индии имеют самую низкую долю сбережений в банках. На основе эмпирического анализа автор пришел к выводу, что

размер фирмы, финансовые услуги, предоставляемые через ГСП, образовательный уровень и пол владельцев малого бизнеса играют значительную роль в доступности микрокредитования от финансовых учреждений.

**Ключевые слова:** микрокредит; микрофинансирование; женское предпринимательство; пол; банки, размер фирмы; доступ к финансам; эконометрика; Индия

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## 1. Introduction

The vitality of microcredit in propelling the growth of small businesses, particularly among marginalized segments, underscores its profound importance as a transformative financial tool. Originating from the visionary efforts of Professor Muhammad Yunus in the 1980s, notably through the Grameen Bank, microcredit stands as a beacon of hope for aspiring entrepreneurs, particularly women, globally and across the South Asian landscape. Its revolutionary impact not only facilitates the evolution of businesses from informal to formal sectors but also acts as a catalyst for economic advancement [1]. However, within its narrative of success lies a darker face [2]. Scholars and human rights advocates have raised criticisms, shedding light on ethical crises within microfinance institutions (MFIs), pointing to exploitative lending practices that create a vicious debt trap, particularly impacting marginalized women [3].

Various studies and evidence suggest that government oversight plays a pivotal role in establishing ethically responsible microfinance institutions and other financial services in the country. Gender discrimination remains an unsolved puzzle in various sectors, and the financial sector is no surprise either. The rising downtrodden and discriminated women populations in education, business and services further contribute to poverty and a lack of awareness of the services, emphasizing the urgent need to dissect gender-based disparities in accessing financial services, specifically microcredit [4].

Moreover, the study underscores the crucial role of self-help groups (SHGs) in empowering women entrepreneurs and facilitating their access to microcredit<sup>1</sup>. This study focuses on the interconnectedness between financial literacy,

gender dynamics, and economic empowerment [5].

The study concentrates on Nagaland, India, because it is urgently necessary to eliminate gender-based disparities and recognize the impact of financial literacy on microcredit accessibility. The region is politically, commercially and demographically isolated from other regions in India. The research problem aims to understand the profound impact of gender and financial awareness on microcredit accessibility in this region. This investigation aims to fill a significant gap in the existing literature by exploring the complex relationships among gender dynamics, financial awareness, and the accessibility of microcredit, providing broad insights into the challenges faced by small business owners in Nagaland, India.

Synthesizing existing literature with empirical analysis, the study endeavors not only to reveal the theoretical implications surrounding gender disparities and financial literacy but also to offer practical implications for policymakers and financial institutions. Theoretical implications include a deeper understanding of the versatile nature of microcredit access, contextualized within the societal and economic landscape of Nagaland. The practical implications should help guide targeted interventions, policy formulations, and regulatory measures that aim to create gender-inclusive financial environments, giving entrepreneurs in the region more power. This comprehensive approach seeks to bridge the gap between academia and actionable strategies, paving the way for equitable financial landscapes and inclusive economic growth in Nagaland.

The rest of the study is organized as follows: Section 2 provides a literature review; Section 3 discusses data and methods, including the econometric model estimation and comparative analysis using secondary data; Section 4

<sup>1</sup> Status of Microfinance in India, NABARD Report (2020–21), Government of India.

presents the empirical findings and provides a brief discussion of the results. Section 5 explores the importance of the theoretical implications, followed by the robustness of the study in Section 6. Finally, Section 7 concludes the study.

## **2. Literature review**

Misconstrual of the terms ‘Microfinance’ and ‘Microcredit’ has been prevalent [6]. However, various researchers, government bodies, and policymakers have identified distinctions between their regulations and financial functioning [7]. The sustainability of the microcredit system has been a key concern in India [8–9]. Various studies emphasize that the sustainability of SHGs and microlending is dependent on their accessibility to local financial institutions [10]. Additionally, the allocation of loans disbursed to microfinance institutions by financial institutions plays a key role in the overall sustainability of lending services to SHGs and other beneficiaries [11].

Furthermore, SHG members also play a significant role in its governance and the functioning of its organization in the region [12]. Identifying the challenges in running group activities, including a lack of credit support from financial institutions, inadequate training programs, insufficient family support, and a lack of interest and cooperation from some members, is also a factor in sustainability [13, 14]. Moreover, it is evident that the affiliation of women entrepreneurs with SHGs reduces the gap between men and women [15, 16]. Therefore, SHG membership plays an important role in the crusade against gender disparity [17].

Despite continuous efforts through, policy suggestions and rigorous government schemes such as the Mahila Udyam Nidhi Schemes, Annapurna scheme, Udyogini scheme gender disparities still prevail in entrepreneurship, especially regarding access to credit. Women entrepreneurs encounter barriers in securing bank loans due to the discriminatory approach towards female entrepreneurs within financial institutions [18]. Empirical evidence shows that women-owned enterprises face challenges in accessing small-business credit and lack financial knowledge or awareness, compared with their male counterparts [19]. However, a sys-

tematic and unbiased credit system in some rural regions of India has a demonstrable positive impact on informal and small businesses, particularly encouraging women entrepreneurs [20, 21].

Various empirical findings reveal that female-headed households are more likely to take loans from numerous informal sources and are less likely to access formal financial institutions than male-headed households [22]. This disparity is a demonstration of the poor banking regulatory and biased credit system prevailing in India’s banking environment [23]. While initiatives such as SHG participation in programs promote financial literacy among women, evidence linking microcredit and women’s empowerment remains limited [24].

Although the existing literature addresses broader aspects of gender disparity in accessing microcredit in India, it fails to document the unique challenges and determinants faced by women entrepreneurs in the hilly regions of the state. Moreover, the findings of the proceeding paper cannot be generalized to the problems faced by women entrepreneurs in Nagaland because the state does not share the same socio-political, economic and demographic parameters as the rest of India. Therefore, acknowledging this research gap and the absence of comprehensive studies focusing on microcredit accessibility and its impact on women entrepreneurs, specifically in Nagaland and the hilly region in general, this study documented the crucial and significant factors faced by women entrepreneurs in accessing microcredit in the state.

*Table 1* condenses the key insights from various studies, showcasing the diverse findings on gender disparities, discrimination, access to credit, the role of SHGs, and the impact of microfinance on different segments of entrepreneurs in India.

### **Formation of the hypothesis**

To comprehensively investigate the role of gender in microcredit accessibility for women entrepreneurs, this study focuses on the influential variables of gender as well as other significant factors such as firm size and the support rendered by SHGs. Drawing from existing literature, the hypotheses are formulated to delve deeper into these dynamics:

Table 1  
Overview of the existing literature

Authors	Findings
Mahato et al. (2023)	Participation of SHGs in collective discussions and programs has a positive impact on beneficiaries
Patel & Parida (2022)	Lower caste female business owners face barriers in accessing microloans compared to their higher-caste counterparts
Basumatary et al. (2022)	Limited evidence exists between microcredit and women's empowerment despite credit program participation
Midya et al. (2021)	SHGs members identify challenges in running group activities, including a lack of credit support from financial institutions, inadequate training programs, insufficient family support, and a lack of interest and cooperation from some members
Chaudhuri et al. (2020)	Women-owned firms encounter disadvantages in small-business credit compared to male-owned firms
Rehman (2023)	Loan disbursement shares to microfinance institutions shape the sustainability of the microcredit system
Vinod and Ghosh (2017)	Female-headed households are more likely to access informal loans, less likely to access formal financial credit
Dasgupta (2006)	Highlights differences in functions and characteristics between microfinance and microcredit.
Srinivasan (2008)	Sustainable SHGs linked to bank access underpin financial services' success
Lensink and Hermes (2007)	Microfinance and microcredit are often used interchangeably, but their regulatory differences are notable
Menon and Rodgers (2011)	Access to credit fuels growth and motivation among women entrepreneurs, aiding in expanding their ventures
Ferri et al. (2018)	Women entrepreneurs face challenges accessing bank loans due to prevalent discrimination in the banking sector
Anand et al. (2020)	Women participating in the self-help program exhibited higher levels of capability indicators across various dimensions. This suggests that the program has a positive impact on enhancing the overall capabilities of the participants
Kumar et al. (2021)	SHG membership has a significant positive impact on aggregate measures of women's empowerment. Moreover, SHG membership reduces gap between men's and women's empowerment score
Patil and Kokate (2017)	Female entrepreneurs have a strong favourable attitude towards SHGs, which highlights the positive perception of and engagement with SHGs

Source: Developed by the author.



**H1: Gender-based discrimination in the accessibility of microcredit.**

Building upon the findings of [25, 26], this hypothesis predicts that gender plays a significant role in access to microcredit. The studies advocate that there has been a discriminatory approach towards women entrepreneurs. The coefficient and p-value of the variable “gender” are anticipated to demonstrate its significance in determining access to microcredit.

**H2: Firm size plays an important role in accessing microcredit.**

Build upon the objectives and findings of the existing literature mentioned, which advocate the potential link between “firm size” and “sustainability”. Our study aims to explore an additional dimension by examining the relationship between the size of the firm and access to microcredit. It proposes that the size of the enterprise might shape its credit requirements and consequently impact its probability of accessing microcredit. Therefore, to understand the role of “firm size”, the study employs it as an important variable to document its impact on accessing microcredit.

**H3: The involvement of SHGs significantly facilitates microcredit accessibility for women entrepreneurs.**

Aligned with the findings of [27] and insights from [29, 30], this hypothesis asserts that the support provided by SHGs, particularly in terms of financial access to banking services, plays a crucial role in enhancing women entrepreneurs’ access to microcredit. The study is based on these hypotheses and aims to find out how gender, firm size, and the helpful role of SHGs affect women entrepreneurs’ access to microcredit.

### **3. Data, variables and methods**

#### **Data sources**

The study is based on both secondary data and the primary survey conducted from January 2023 to April 2023 among small business enterprises in Nagaland. Secondary data are drawn from the Centre for Monitoring Indian Economy (CMIE) Economic Outlook and the National Bank for Agriculture and Rural Development (NABARD) to draw a comparative analysis of the loans disbursed to SHGs by banks and region-wise saving of SHGs in India. Secondary information does not docu-

ment the role of gender in the accessibility of microcredit from banks and financial institutions. Therefore, using a purposive sampling method, primary data have been collected from 205 small and informal business owners in the mentioned state to attain the objective of the study.

#### **Variables**

A number of variables have been employed for the econometric analysis. The study employed “Access to Micro-Credit” as the endogenous variable, which is dichotomous in nature, where an individual representing his or her firm takes the value 1, if she or he has taken micro-credit from any formal financial institution or bank and 0 otherwise. However, to document the role of gender and also, if the gender of the business owner plays a role in the accessibility of microcredit, we have employed gender as one of the covariates where a business owner who is male takes the value 1 and a female takes the value 0, with the other six independent variables, namely; education, firm size, gender, marital status, awareness of SHGs, help from SHGs in accessing microloan, business is run from home or a shop. We also, employed the expanding status of the firm, which is binary in nature, where the firm owner takes the value 1 for expanding and 0 for stagnant, to document the impact of the firm size as the deciding factor in the accessibility of the microloans. The role of the SHGs and their financial awareness and accessibility or collaborative efforts to act as a helping catalyst for women entrepreneurs have also been documented in the analysis.

#### **Methodology**

To observe the trends in the percentage share of loans disbursed to the SHGs by the banks. We use time-series data from the CMIE Economic Outlook and draw a comparative analysis using the percentage share approach. This observation will help us study the amount of loan disbursed to SHGs by banks in India over time. Furthermore, we computed region-wise saving amounts of SHGs in India using NABARD data. The findings from these observations will help us draw a holistic comparative

analysis of the SHGs presence and savings amounts in India.

To document the determinants of access to microcredit, the above-mentioned variables have been employed. Using descriptive statistics, the averages of the variables have been documented. Further, an econometric approach using the Logit Regression Model has been presented to examine the significant role of business owner genders in accessing microcredit.

### Logit regression model

We employ the logistic regression model to formally understand the determinants of accessing microloans. The model takes the following form:

$$\text{Microcredit}_i = \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Education}_i + \beta_3 \text{Marital Status}_i + \beta_4 \text{Business Home}_i + \beta_5 \text{Firm Size}_i + \beta_6 \text{Awareness SHGs}_i + \beta_7 \text{Loan Access help SHGs} + \varepsilon_i,$$

where:  $\beta_0$  is the likelihood of the client accessing loans regardless of the absence of any of the determinants,  $\beta_1$  is the likelihood of the client accessing microcredit given the individual (*i*) gender,  $\beta_2$  is the likelihood of the client accessing microcredit given his/her educational qualification,  $\beta_3$  is the likelihood of the client accessing microcredit given his/her marital status,  $\beta_4$  is the likelihood of the client accessing microcredit individual (*i*) business operated from home or not,  $\beta_5$  is the likelihood of the client accessing microcredit given the size of the firm,  $\beta_6$  is the likelihood of the client accessing microcredit provided the individual (*i*) is aware of the SHGs and  $\beta_7$  is the likelihood of the client accessing microcredit given individual ( $\beta$ ) has been helped by the SHGs in accessing microcredit and  $\varepsilon_i$  is the error term in the model.

### Percentage share of loans disbursed to SHGs by banks

Using the CMIE Economic Outlook data, *Table 2* below presents the percentage share of the loans disbursed to SHGs by each bank in India over the past ten years. The table indicates that public sector banks had the highest share of loans disbursed to SHGs at 54.6%, while private sector banks had the lowest, averaging 6.7%. Examining the bank group-wise share of loans disbursed, it is evident that public sector banks dominated the share with an average percent

for the period under study. Thus, the findings from the analysis of the data align with the existing literature, suggesting that private banks with profit-driven policies are less likely to give credit to SHGs<sup>2</sup>.

### Region-wise SHGs savings in India

This section presents a comparative analysis of the region-wise percentage share of SHGs in India from 2018–2021. *Table 3* shows that the southern region of India has the largest percentage share of SHG savings, at 55.30 percent over the course of all financial years. However, the North-Eastern Region (NER) in India has the lowest share of savings, with 1.73 percent in 2018–2019, 1.84 percent in 2019–2020 and 2.22 percent in 2020–2021. This aligns with the report published by the Government of India<sup>3</sup>. Therefore, the highest percentage share of SHG savings in the southern region of India and the lowest share in NER, India, are no surprise in the study.

## 4. Results and discussion

In this section, we have documented the determinants of access to microcredit and the role of gender from the data collected in the field survey. First, we present the descriptive statistics before showing the empirical findings.

### Summary statistics

*Table 4* presents the summary statistics of the variables used in the econometric exercise.

Data in *Table 4* reveals that an average of 65 percent of the clients have access to microloans, while, on average, 27 percent of the clients are married. Additionally, 50 percent of business owners are female. From the above table, it is evident that on average, the firm sizes in Nagaland are expanding, with 20 percent on average being operated from the residence of the entrepreneur. It has also been observed that, on average, 52 percent of the firm owners are aware of the SHGs, and, on

<sup>2</sup> It should be noted that the findings using CMIE Economic Outlook data also align with the Status of Microfinance in India Report (2020–21), Government of India.

<sup>3</sup> The Status of Microfinance in India Report (2020–21) documented that the largest number (in lakh) of Self-Help Groups (SHGs) registered was in the Southern Region of India, and the lowest number (in lakh) was in the North Eastern Region of India.

Table 2  
Percentage share (%) of loans disbursed to SHGs by banks

Year	Public sector banks	Private sector banks	Regional rural banks	Co-operative banks	Total
2010–11	54.0	2.0	24.8	19.2	100
2011–12	49.8	2.6	26.6	21.1	100
2012–13	54.6	5.7	25.6	14.1	100
2013–14	49.7	6.4	24.4	19.4	100
2014–15	42.1	10.5	32.1	15.3	100
2015–16	51.2	10.6	25.7	12.5	100
2016–17	49.8	9.0	29.4	11.8	100
2017–18	50.1	6.2	34.6	9.1	100
2018–19	51.0	5.1	34.9	9.1	100
2019–20	49.6	7.5	34.8	8.1	100
2020–21	42.2	8.2	41.1	8.5	100
Average Share	49.5	6.7	30.3	13.5	100
Maximum % Share	54.6	10.6	41.1	21.1	
Minimum % Share	42.1	2.0	24.4	8.1	

Source: Developed by the author.

Table 3  
Region-wise percentage share (%) of SHGs savings in India

Regions	2018–2019	2019–2020	2020–2021
	Percentage Share (Savings-Amount of SHGs)	Percentage Share (Savings-Amount of SHGs)	Percentage Share (Savings-Amount of SHGs)
Northern Region	2.68	2.28	4.65
North Eastern Region (NER)	1.73	1.84	2.22
Eastern Region	25.77	25.40	20.68
Central Region	5.71	6.55	5.65
Western Region	8.80	7.72	9.98
Southern Region	55.30	56.21	56.82
Maximum % Share	55.30	56.21	56.82
Minimum % Share	1.73	1.84	2.22
Total	100	100	100

Source: Developed by the author.

Table 4  
Summary statistics of the dependent and independent variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Microcredit	205	0.65	0.479	0	1
Marital Status	205	0.27	0.446	0	1
Education	205	2.26	0.774	1	3
Firm Size	205	2.64	0.578	1	3
Gender	205	0.50	0.503	0	1
Business Operation Home	205	0.20	0.402	0	1
Awareness of SHGs	205	0.52	0.502	0	1
Help by SHGs in Accessing Microcredit	205	0.22	0.416	0	1

Source: Developed by the author.

Table 5  
Correlation matrix of the determinants

Variables	Microcredit	Mrt_Sts	Edu	Firm_Size	Gender	Bss_Home	Awr_SHG	SHG_FinHlp
Microcredit	1.0000							
Mrt_Status	-0.3094	1.0000						
Edu	0.6292	-0.2054	1.0000					
Firm_Size	0.3064	0.0282	0.0307	1.0000				
Gender	0.6499	-0.2478	0.3378	0.2088	1.0000			
Bss_Home	0.0524	0.0901	0.0260	0.1827	0.0100	1.0000		
Awr_SHG	0.0084	-0.0920	0.1425	-0.1142	-0.2802	0.1301	1.0000	
SHG_FinHlp	-0.4707	0.2208	-0.1794	-0.1713	-0.4345	-0.0241	0.1720	1.0000

Source: Developed by the author.

average, 22 percent of the businesses are assisted by SHGs in accessing microloans in Nagaland.

The correlation matrix of the determinants of accessing microcredit has been presented in Table 5. The correlation matrix has been computed to check the multicollinearity of the variables before running the regression exercise. As expected, there is a positive correlation between education and microcredit. However, a negative relationship between awareness of SHGs and

gender shows a lack of awareness of SHGs in the region.

Table 6 shows the construction of the variables and their anticipated relationships. Therefore, we report the empirical results of the determinants of access to microcredit: Logit Model Analysis in Table 7.

Table 7 indicates that gender is positively significant at the 1% level, signifying that male entrepreneurs are more likely to have access to



Table 6  
Construction of the variables

Variables	Definitions	Descriptions	Anticipated Relationship
<b>Endogeneous</b>			
Microcredit	Binary Variable; Takes microcredit = 1 and 0 otherwise.	The business is financed through microcredit	
<b>Exogeneous</b>			
<b>Client Characteristics</b>			
Gender	Binary Variable; male client = 1 and 0 otherwise.	Gender of the respondent.	+/-
Mrt_Status	Binary Variable; married client = 1 and 0 otherwise.	Marital Status of the respondent.	+/-
Edu	Categorical Variable; 1= Less than primary school. 2 = High school and below graduation, 3 = Graduation and above.	Education qualification of the respondent.	+/-
<b>Awareness Dimension</b>			
Awr_SHG	Binary Variable; client is aware about the SHGs and its program =1 and 0 otherwise	SHGs awareness campaigns and programs.	+/-
SHG_FinHlp	Binary Variable: Clients takes value 1 is helped by SHGs in accessing loan and 0 otherwise	SHGs collaboration with financial institutions and helping women entrepreneurs in accessing loan	+/-
<b>Business Characteristics</b>			
Bss_Home	Binary Variable; Business operated from owners home = 1 and 0 otherwise	Business operated from home or not	+/-
Firm_Size	Binary Variable; Expanding = 1 and 0 = otherwise	Business is expanding or not	+/-

Source: Developed by the author.

microcredit compared to their female counterparts<sup>4</sup>. Education, being one of the important determinants, has a positive significance, indicating that more qualified clients are more likely

to access microcredit. However, the size of the firm acts as a deciding factor in accessing a loan. It has been documented in the above table, with 5% positive significance, that the small firms in the expanding stage are more likely to avail microloans. The empirical findings suggest that SHGs play a paramount role in helping women entrepreneurs' access microcredits from banks

<sup>4</sup> This finding is consistent with the results of [24]. According to [24], the female entrepreneurs are disadvantaged in the market for small-business credit compared to their counter male entrepreneurs.

Table 7  
Factor determining access to microcredit (logit regression)

Variables	Coefficient	Standard Error
Mrt_Sts	-0.943	1.181
Edu	3.367***	1.009
Firm_Size	2.194**	0.944
Gender	4.157***	1.289
Bss_Home	-0.506	1.329
Awr_SHG	-2.123	1.191
SHG_FinHlp	1.473*	1.276
Constant	-13.86	4.131
Log Likelihood	-16.78	
Pseudo R <sup>2</sup>	0.74	
Observations	205	

(a)\*\*\*, \*\*, And \* indicates at significance at 1%, 5% and 10% level respectively (\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$ ).

Source: Developed by the author.

and financial institutions. Thus, the findings regarding the role of SHGs in the empowerment of participation align with existing literature. Considering all the documented variables, the gender of the business owners and SHGs in helping women entrepreneurs access microloans makes a significant impact.

### Discussion

In this study, we have drawn a comparative analysis of the loans disbursed to SHGs by banks over the past ten years and the region-wise savings of SHGs in India. The findings of the comparative analysis reveal the dominance of the public sector banks in the amount of loans disbursed to SHGs over time. Further, the outcomes of the region-wise analysis documented the poor performance of the North-Eastern Region in saving amounts compared to the rest of India. Our findings from the econometric exercise document the role of gender in accessing microcredit within Nagaland, revealing significant gender disparities in accessing financial services. The study reveals that male entrepreneurs demonstrate a higher likelihood of accessing microloans compared to their female counterparts. However, alongside gender, qualification and firm size also played an im-

portant role in shaping the accessibility of microcredit. Notably, a positive correlation exists between higher qualifications and access to microcredit. Simultaneously, smaller firms in an expanding phase are more likely to access microloans, demonstrating the influence of business dynamics in navigating financial aid. Furthermore, the research demonstrates the crucial role that SHGs play in facilitating microcredit accessibility, particularly for women entrepreneurs. However, the study documents a crucial need for enhanced financial awareness among illiterate or low-educated female entrepreneurs regarding SHGs and their role in facilitating access to financial services. From the study, it becomes evident that better support from SHGs significantly impacts women's capacity to access microcredit, alongside other important factors.

### 5. Theoretical implication of the study Gender disparity and financial inclusion

The study significantly contributes to the existing literature on gender disparity within the financial system around the world in general and in mainland India in particular. The findings of this empirical study show the prevailing gender bias in the Northeastern Region

Table 8  
One-way ANOVA analysis

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Statistic	P-Value
Between Groups	9.61	1	9.61	71.67	0.000***
Within Groups	13.14	98	0.134		
Total	22.75	99	0.229		

(a)\*\*\* indicates at significance at 1% level respectively (\*\* $p < 0.01$ ).

Source: Developed by the author.

(NER) of the country, by taking observations from Nagaland. The theoretical implication lies in highlighting the persistent barrier that hinders financial inclusion.

### Role of SHGs

The role and significant impact of the SHGs in molding women's entrepreneurship in rural and remote regions of India cannot be excluded. Acknowledging this from the existing literature and from the findings of this study, the insights propose a theoretical landscape by documenting and advocating the intermediary and collaborative role of the SHGs and financial institutions in building the social infrastructure to help marginalized female entrepreneurs access microcredit.

### Firm dynamics and education

Firm size and the qualification of the entrepreneur play a significant role as deciding factors in the accessibility of microcredit, along with the gender of the entrepreneur. The findings of the paper advocate for contributing to the theoretical understanding of the business landscape in the NER, which is no different from any other region in deliberately excluding its female entrepreneurs from microcredit access. The paper draws more compelling insights into understanding the relationship between firm size, individual educational qualifications and the accessibility to microcredit from financial institutions.

## 6. Robustness test

For the validation of the findings, we conducted a series of robustness tests. Firstly, utilizing

a one-way ANOVA analysis<sup>5</sup>, we specifically isolated the influence of Gender as an instrumental variable on Access to Microcredit. This method allowed us to observe the exclusive role of gender in accessing microcredit, revealing a statistically significant relationship. Additionally, to ensure the stability of the results concerning other variables, we employed a probit model regression analysis encompassing all explanatory factors. The outcomes from this probit regression consistently mirrored the conclusions drawn from the logit model used in our study, reaffirming the robustness of our initial findings. Ultimately, the coherence between the results obtained from both the One-Way ANOVA model and probit model regression analyses further solidifies the main baseline results of our study, underscoring the credibility and consistency of our conclusions regarding the relationship between the variables investigated.

The robustness test results are presented in Tables 8, 9.

## 7. Conclusion and policy suggestions

In this study, we have examined the trends of loan disbursement to Self-Help Groups (SHGs) over the past ten years and conducted a region-wise comparative analysis of SHGs savings in India. Our findings reveal that public sector banks contributed the highest amount

<sup>5</sup> A Simple Linear Regression Model (SLRM) was also used to check the impact of 'Gender' on access to microcredit. Subsequently, a One-Way ANOVA was adopted to compare the mean access to microcredit between males and females and to statistically examine the significant relationship between gender and access to microcredit.

Table 9  
Factor determining access to microcredit (probit regression)

Variables	Coefficient	Standard Error
Mrt_Sts	-0.483	0.644
Edu	1.803***	0.516
Firm_Size	1.209**	0.488
Gender	2.135***	0.602
Bss_Hm	-0.175	0.708
Awr_SHG	0.705	0.659
SHG_FinHlp	1.336*	0.621
Constant	-13.86	2.088
Log Likelihood	-16.86	
Pseudo R <sup>2</sup>	0.73	
Observations	205	

(a)\*\*\*, \*\*, And \* indicates at significance at 1%, 5% and 10% level respectively (\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$ ).

Source: Developed by the author.

of loans to SHGs (around 49%), and the comparative results highlighted that NER has the lowest amounts of savings with banks compared to the rest of the regions in India. Further, from the econometric analysis, our study reveals that the role of gender in accessing microloans from financial institutions and banks plays a significant role in the North-Eastern Region (NER) of India. Our study relied on the cohort data of 205 small and informal business owners. We find that male entrepreneurs are more likely to access microloans compared to female entrepreneurs, which is consistent with the findings of existing empirical studies. The findings of our study also highlight the complex relationship of factors influencing microcredit accessibility, prominently highlighting educational qualifications, firm size, and the collaborative role of SHGs and financial institutions in helping women entrepreneurs in accessing microcredit. Although schemes like Mahila Udyam Nidhi (MUN) by the Government of India have accelerated the growth of women's entrepreneurship in India, a more inclusive financial model aligned with the demographic and socio-political ethos of

NER entrepreneurs is needed. Thus, considering policy suggestions, the paper strongly advocates for an inclusive financial model to alleviate the marginalized female entrepreneurs in the North-Eastern Region (NER) in particular and India in general.

#### Limitations and future research directions

- The study's scope is confined to a specific geographical region and a relatively small sample size, potentially limiting the generalization of the findings.
- The study predominantly focuses on gender dynamics, overlooking other crucial aspects such as cultural influences, regional policies, and technological advancements that might impact microcredit.
- Though, the study identifies the role of SHGs in aiding women entrepreneurs, it falls short in exploring the ins and outs of SHGs operations, the effectiveness of their support mechanisms, and the sustainability of their impact on microcredit access. Future research could delve deeper into understanding the specific mechanisms through which SHGs facilitate financial inclusion.



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# Factors Influencing Students' Satisfaction at Higher Educational Institutions in Oman

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## ABSTRACT

**Purpose:** Higher education is becoming increasingly critical for a nation's socioeconomic and technical innovation, and the quality of education these institutions provide directly affects how well a country does. Hence, this study examines factors influencing student satisfaction at Oman's higher educational institutions (HEIs). **Methodology:** Following scale development, the bootstrapping approach tested the research hypothesis. A survey was undertaken to gauge student satisfaction at various higher education institutions in Oman. Software for structural equation modeling (SEM PLS) has been used to examine the results to determine the relationships between the variables. **Findings:** The result of this study revealed that lectures and university resources positively correlated with student satisfaction, while technology showed no significant impact on student satisfaction.

**Keywords:** students; satisfaction; higher educational institutions; HEIs; lectures; technology; Oman

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ОРИГИНАЛЬНАЯ СТАТЬЯ

# Факторы, влияющие на удовлетворенность студентов высшими учебными заведениями Омана

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## АННОТАЦИЯ

**Цель исследования:** высшее образование приобретает все большее значение для социально-экономического развития и технических инноваций страны, а качество образования, предоставляемого этими учебными заведениями, напрямую влияет на успехи страны. Поэтому в данном исследовании рассматриваются факторы, влияющие на удовлетворенность студентов в высших учебных заведениях (вузах) Омана. **Методология:** после разработки шкалы с помощью метода бутстреппинга была проверена гипотеза исследования. Был проведен опрос для определения степени удовлетворенности студентов в различных высших учебных заведениях Омана. Программное обеспечение для моделирования структурных уравнений (SEM PLS) было использовано для изучения результатов с целью определения взаимосвязи между переменными. **Выводы:** результаты исследования показали, что лекции и ресурсы университета положительно коррелируют с удовлетворенностью студентов, в то время как технологии не показали значительного влияния на удовлетворенность студентов.

**Ключевые слова:** студенты; удовлетворенность; высшие учебные заведения; вузы; лекции; технологии; Оман

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## 1. Introduction

Evaluating students' educational progress leads to a temporary mindset known as «students' satisfaction,» which is the result and apex of an academic structure and an effective prelude to encouraging student loyalty [1]. Student satisfaction can be defined as a person's attitude about their educational experience and outcomes. Thus, the kin level of occurrences and perceived performance in academic facilities during study time can be used to measure student happiness. When everything is considered, students' contentment can be described as a transient mindset from assessing their educational experience, services, and facilities [1].

The expansion of several areas in a nation, such as economic growth, the raising of living standards, etc., is greatly influenced by education. Higher education, in particular, is considered an essential resource for a country's socioeconomic and technological growth in the twenty-first century [2]. Student feedback on service received as a student is referred to as student satisfaction feedback. This may involve opinions on how education is organized, learning takes place, and learning support resources are used [3]. The performance of a nation is directly impacted by the caliber of education provided by higher educational institutions (HEIs) [2]. Any educational institution's primary constituent is thought to be its students. Any higher education institution's performance mainly hinges on its students' satisfaction. In other words, student satisfaction can be used to assess the strengths and flaws of HEIs. In this situation, aspects of the educational service (such as the caliber of the instruction, the activities that go along with it, and extracurricular activities) impact students' Satisfaction [2]. The number of universities and colleges in Oman is gradually increasing, and significant local and international competition exists among them [4].

Since higher education is one of the critical factors in any country's development in the twenty-first century, it has become a crucial area of study for scientists. On the one hand, numerous studies have shown a beneficial effect of higher education spending on a nation's economic development [5], also think universities and other higher education institutions

have always been more receptive to and willing to incorporate new information and technical products, as well as unique teaching and learning resources and platforms, that enhance the teaching and learning process. All educational operations have changed due to digitalization and information and communication technology, with benefits and problems. Beginning with static e-learning resources (like electronic presentations, documents, and e-books) and progressing to dynamic results (like virtual laboratories, intelligent tutoring systems, and augmented reality e-learning solutions), the first step is the advance of digitalized electronic contacts for teaching and learning [6].

Student values and attitudes about education, including motivation to study, the importance of education, and knowledge, impact how satisfied students are with higher education and educational quality metrics. The following definitions of education's ultimate value include a variety of others: development of skills, cognitive requirements, and general literacy [3]. Additionally, it is crucial to regularly assess the quality of educational services due to the current legislative framework's emphasis on higher education satisfaction. This is feasible by integrating statistical and sociological methodologies used in monitoring [3].

Government and financial institutions have been severely neglecting the higher education sector for several years, which has resulted in a steep fall in the value of services supplied by HEIs [7]. The most significant determinant of student satisfaction is grade point average (GPA). Personal aspects include age, gender, employment status, preferred learning style, and student GPA. Official factors include legal expectations, instructor responsiveness, and instructional methods. Additionally, many essential factors influence student satisfaction in universities, including the quality of the classroom, the feedback students receive, the relationship between lecturers and students, interactions between students, the content of the courses, the resources available for learning, the library, and the learning materials. According to [5], several factors, including but not limited to the effectiveness of teaching strategies, adaptability of the curriculum, university standing and reputation, faculty support, student-centered approach,



campus atmosphere, institutional efficiency, and social environment, play a crucial role in determining student satisfaction in the world of higher education.

The employment of e-learning systems results in a lack of comprehension because the elements employed to create such systems cannot enhance academic achievement [8]. All HEIs must understand the value of quality in their programs. A thorough investigation of student satisfaction in higher education, according to [8], includes a variety of factors, including graduate attributes, students' learning objectives, curriculum design, student admission criteria, teaching efficacy, plagiarism prevention measures, student internships, and placements, assessment approaches, quality standards, and moderation, academic integrity and invigilation, student retention and progression rates, post-graduation outcomes, and more.

Hence, the study's research objectives are to examine how lectures impact students' satisfaction in Oman's higher education institutions, analyze how resources impact students' satisfaction in Oman's higher education institutions, and investigate how technology affects students' satisfaction in Oman's higher education institutions.

## **2. Literature review**

The author of [9] suggested that the creation of the United Arab Emirates global higher education system's ability to satisfy its students is significantly influenced by the caliber of its professors, the excellence and accessibility of its resources, and its successful use of technology. The survey also showed that satisfaction ratings between undergraduate and graduate programs differ significantly. The authors of [10] conducted a study on the opinions of faculty and students in Finland on university facilities. According to their survey, essential university facilities for research and instruction have a more significant overall impact — satisfaction among students and employees than extra amenities. Further investigation revealed that libraries are the best predictor of happiness, with academics and students believing that physical facilities are more significant than general infrastructures. Students' satisfaction with aspects of a pleasant knowl-

edge environment, community areas, site convenience, and staff satisfaction with lab and teaching facilities were all mentioned in the survey.

In conclusion, the overall findings of their study showed that in Finland, characteristic activities connected to research and instruction have the most significant effects on the general satisfaction of both groups [1]. In addition, numerous additional elements are discovered to impact students' pleasure in multiple areas of education over the making. From a solid theoretical and empirical base, the study [11] summarized the positive research on students' fulfillment that is currently available. Data were gathered from reputable publications and conference papers and constructively analyzed from numerous angles to establish a solid foundation for future inquiries. Factors influencing student satisfaction levels in the Armenian setting were outlined, citing program curriculum and facility services as essential factors. The same study did draw attention to the unfavorable correlation between student satisfaction scores, facility teaching methods, and graduate teaching assistants. The importance of physical university facilities on student happiness levels needed to be clarified in the Malaysian setting, where teaching and learning were identified as the most crucial components of student satisfaction levels [12]. The SERVQUAL and SERVPECT models are the most frequently employed in research on students' satisfaction with higher education services, like studies on customers' happiness with service in other fields [13]. The importance of students' feelings in their educational experience has come to light in a growing body of research as they may be connected to student engagement [14], motivation, and self-regulation of learning [15], among other factors. Student satisfaction is thought to be influenced by emotions and emotional reactions, such as worry, frustration, disappointment, pride, enthusiasm, and excitement, that may result from experiencing role conflict or role augmentation [16].

The degree of student satisfaction is a complicated term influenced by various circumstances. Numerous studies have shown that there are connections between several aspects that have an impact on student satisfaction levels. Two categories of influences on student satisfaction

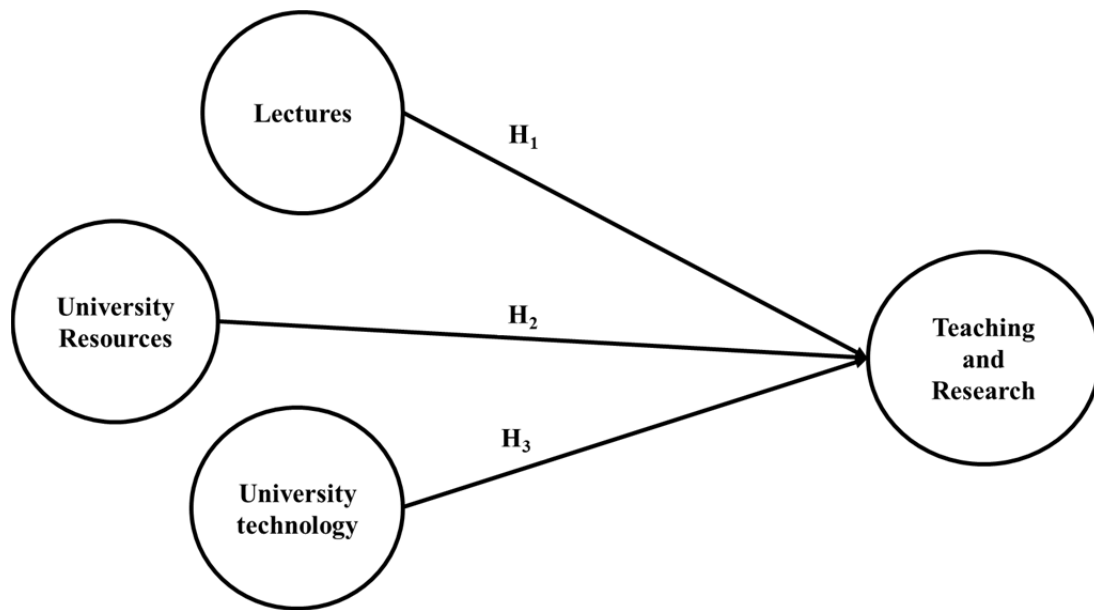


Fig. 1. Schematic Diagram of Research Framework

Source: Developed by the authors.

levels in higher education were identified by [17]: institutional factors, which include gender, employment, preferred learning style, and GPA, and personal characteristics, which include the standard of instructions, promptness of instructor feedback, understanding of standards, and teaching style (GPA) [12].

It investigated and evaluated how e-learning affected students' psychological discomfort during the COVID-19 epidemic [18]. Information and communication technologies (ICT) use impacts how the university's brand is seen by the public [19, 20]. According to several research studies [21, 22], college students can adopt, use, and accept emergency online learning if they construct their online system and make informed selections. Web technologies and the e-learning process have been impacted by technological advancements, which calls for efforts to fully exploit technological innovation to enhance e-learning systems and their advantages [19, 23].

The fundamental structure of this study is presented in terms of the self-governing mutable, students' satisfaction, and the reliance on mutable factors influencing the theoretical framework. A rational framework was built to describe the relationship between variable stars for a total student satisfaction appraisal study. The level of students in educational institutions has been investigated in this study. Fig. 1 depicts the future research framework for this project.

### 2.1. The link between lectures and students' satisfaction

Micro lectures frequently help students better understand the fundamental ideas of challenging material and enhance their learning outcomes. Teachers can use them to promote abstract learning [24]. Also, teachers can deliver various engaging and complicated education, including group projects, problem-solving exercises, and in-person discussions. Changing these settings from in-person engagement to using online learning may drastically influence their learning experience and academic accomplishment, despite various lecture technologies to facilitate online learning in a range of techniques [25].

Hence, it is hypothesized that:

$H_1$ : Lecturing has a positive impact on students' satisfaction.

### 2.2. The link between university resources and students' satisfaction

In the 21st century, the level of academic resources and students' satisfaction in universities have become high-profile issues. Universities need the resources to successfully carry out their primary missions of teaching, learning, and research, which helps to ensure that students have a fulfilling educational experience [26]. Utilization of various library information resources by pupils improves the post-graduates' access to knowledge by reshaping

the environment to meet their needs for excellent information sources better [27]. Hence, it is hypothesized that:

$H_2$ : University resources have a positive impact on students' satisfaction.

### 2.3. The link between university technology and students' satisfaction

Technology use is simple and professed. It emphasizes the necessity to develop user-approachable technologies that don't involve any physical or cerebral effort on the part of users. User sociability, or ease of use of new technology, is the more significant component of the adoption of this new technology [28], and their study's conclusions are consistent with the tenets of the technology-taking model: users are more likely to receive or be satisfied with a technology they find beneficial and straightforward to use. Their findings show that perceived usability and simplicity should be considered while developing new technologies. These two approaches can be applied to current systems to enhance their design and implementation. More investigation is needed to assess and contrast this new learning management system with existing ones [28]. Technology use predicts student performance, but inspiration rather than technology use indicates student motivation. Therefore, when the model's inspirations exist, the relationship between technological engagement and satisfaction, academic success, and functional performance is delayed [29]. Technology improves student motivation and interest while also facilitating learning and avoiding monotony. Additionally, technology sharpens focus, maintains information, piques curiosity, and helps to make abstract ideas concrete. Technology can be incorporated into science classes to engage students, help them overcome biases, alter their perspectives, and produce more valuable outcomes [30].

Hence, it is hypothesized that:

$H_3$ : Technology at the university positively impacts students' satisfaction.

## 3. Research methodology

The researchers established a conceptual framework for evaluating students' satisfaction with higher education institutions and their

propensity to refer other prospective students to such institutions. The idea of student happiness as a mediator between resources, capabilities, and suggestions is used. Teaching, learning, technology, libraries, student services, and student orientation are among the competencies and resources influencing student satisfaction. The resource requirements of domestic and international students are contrasted. This research has been employed in this investigation and is presented in this section. The main essential parts of the study, such as the study design, population and sampling techniques, variable measurement, unit of analysis, measurements, and data analysis techniques, were discussed in this section.

The information for this study was based on a measurable approach. A questionnaire was created with a set of questions addressing accounting and non-accounting majoring students from various universities situated in the Ad Dakhiliyah region of the Sultanate of Oman to assess student satisfaction with university technology, lecturers, and university resources, and our target group is students at prominent universities in Oman. Accessibility and representation within the Ad Dakhiliyah region were considered during the university selection process. This set of criteria guaranteed a varied sample for comprehensive analysis. The independent variable is the influencing factors, and the dependent variable is student satisfaction. This questionnaire is adapted from [9], which is attached (Appendix-A).

According to their limited information, the current study's authors cannot determine the total population since the exact information source is unavailable. A minimum of 10 events per variable (EPV), a rule of thumb established from simulation studies, is typically used to determine an appropriate sample size for a Cox regression analysis [31]. Eighty samples are needed at a minimum in this circumstance, as the researchers employed four variables in the current study. Hence, the sample size of this study is 112, which is acceptable for the data analysis. The current study employed simple random techniques for sample collection. Simple random sampling of individuals is still possible in lacking a population list, provided the population region is represented on a map [32].

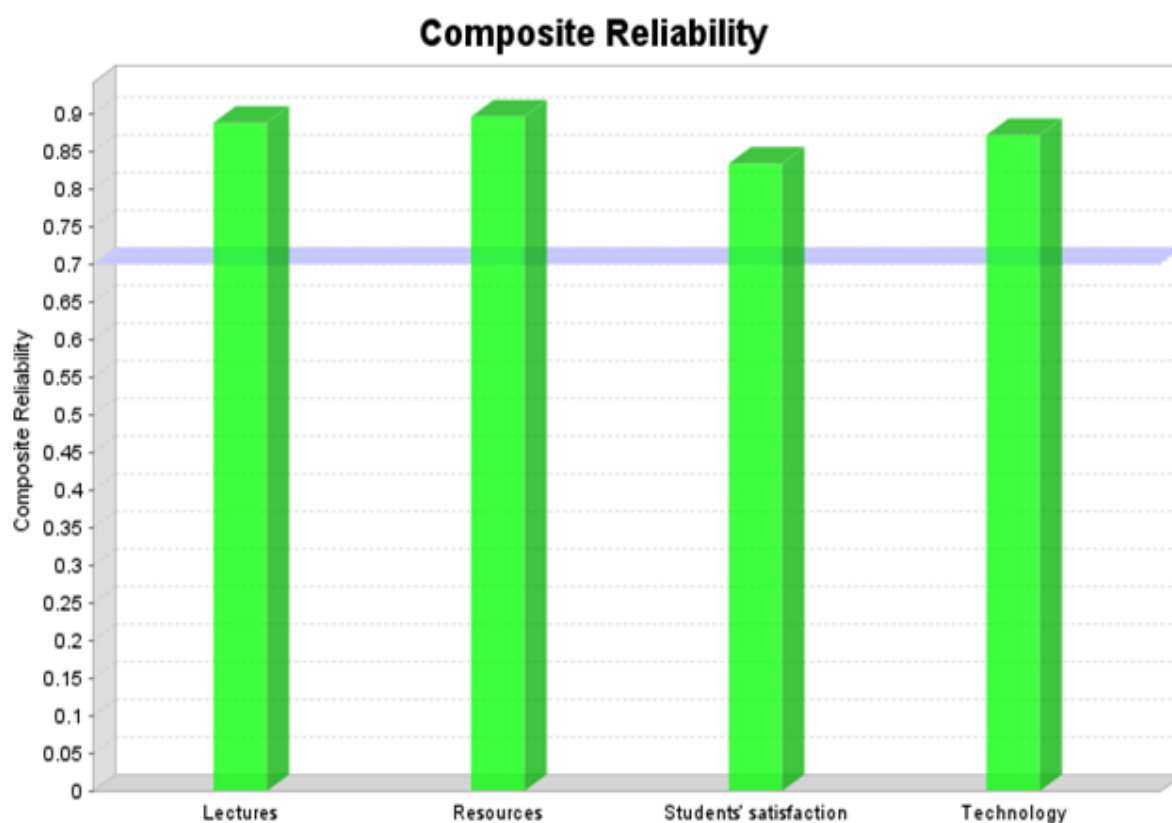


Fig. 2. Composite reliability

Source: Developed by the authors.

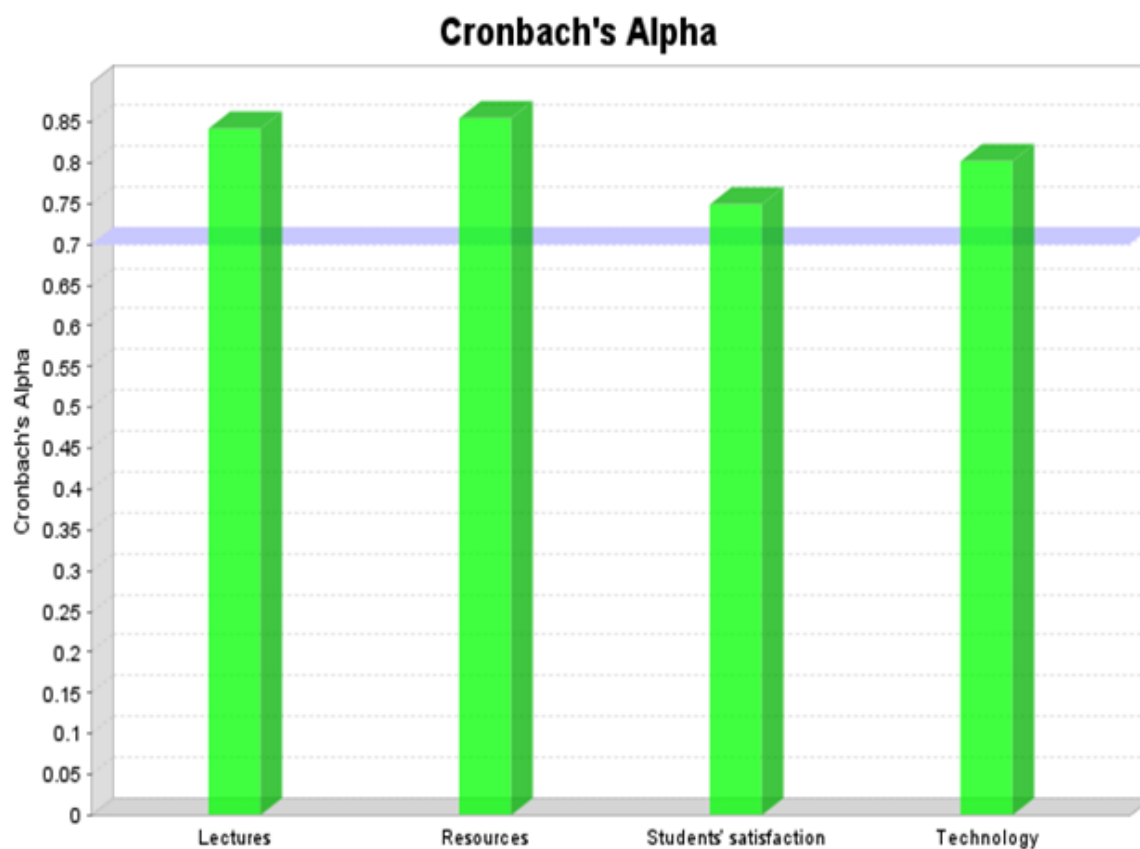


Fig. 3. Cronbach's alpha

Source: Developed by the authors.



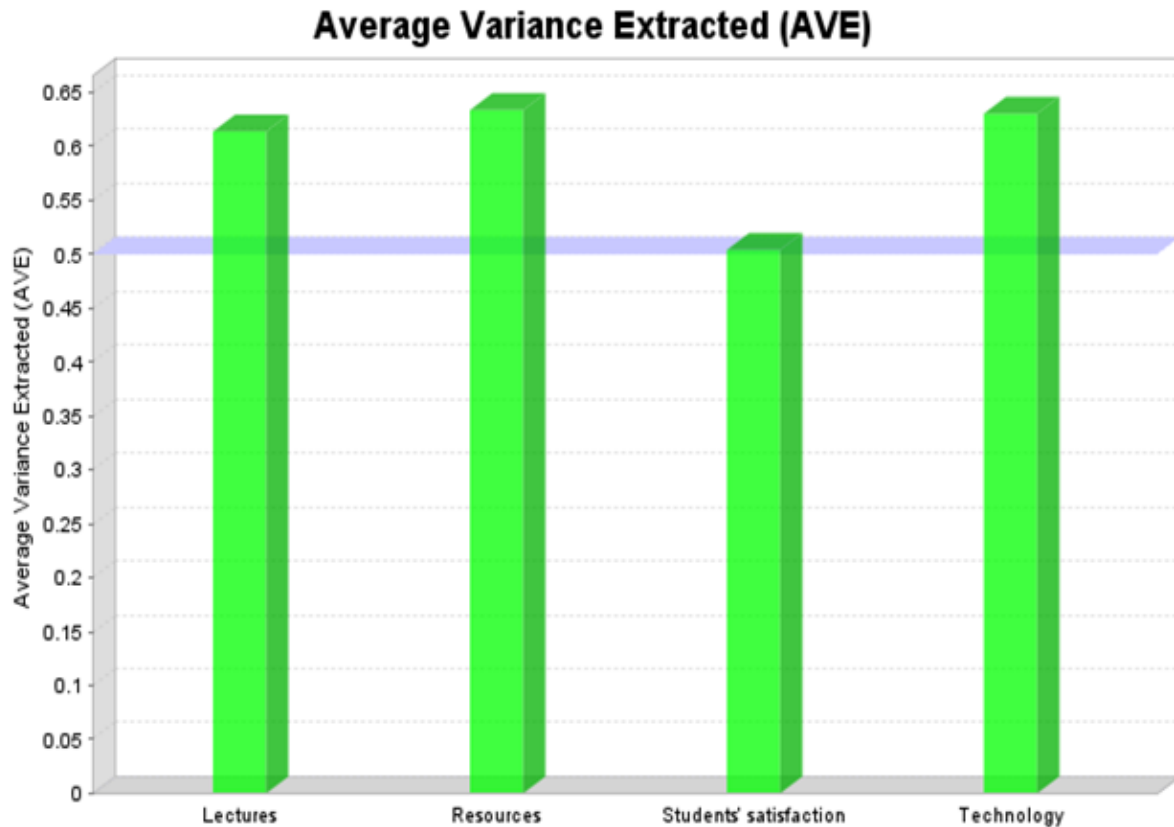


Fig. 4. Average variance expected

Source: Developed by the authors.

This study used a set of survey tools containing lists of questions to measure the (numbers that change/things that change). Partial Least Squares and (connected to what binds things together and makes them strong) Equation Modeling (PLS-SEM) software will be used to analyze the data in the study carefully.

Fig. 2 shows the current composite reliability (CR) scores, and Fig. 3 shows the Cronbach's Alpha (CA) values. Given that all of the constructs have CR ratings that are higher than the 0.70 cutoffs specified by [33–35], the results shown in Fig. 2, suggest that the constructs exhibit reliability. The model also meets the criteria set out by [36, 37] since the average variance extracted (AVE), as displayed in Fig. 4, is greater than the cutoff point of 0.50. However, similar to earlier research [38, 39] and corroborated by the analytic results, the Heterotrait-Monotrait (HTMT) ratios in our study, shown in Fig. 5, continue to be below the advised threshold of 0.90.

To better understand latent constructs and linkages in structural equation models, [36] advise looking into the possibilities of Importance-Performance Map Analysis (IPMA) in the

context of Partial Least Squares (PLS). Fig. 5's importance-performance matrix map, which the authors' research includes, sheds light on the relative value of several elements of student happiness. The map shows that university resources have a significant score of 0.392, indicating that students value them highly. Lectures also scored 0.308, revealing their significance in affecting students' pleasure. Conversely, technology scored a substantially lower 0.013, indicating that its influence on Oman University students' satisfaction is comparatively less significant.

## 4. Analysis and findings

### 4.1. Demographic characteristics

Table 1 gives demographic details about the study's chosen sample.

The authors performed regression analysis to investigate the relationship between respondents' age, gender, graduation status, and general satisfaction with the dependent variable, student satisfaction. Fig. 6 (regression analysis result) and Table 2 show a descriptive matrix with columns of mean, median, standard deviation, excess kurtosis, skewness, number of ob-

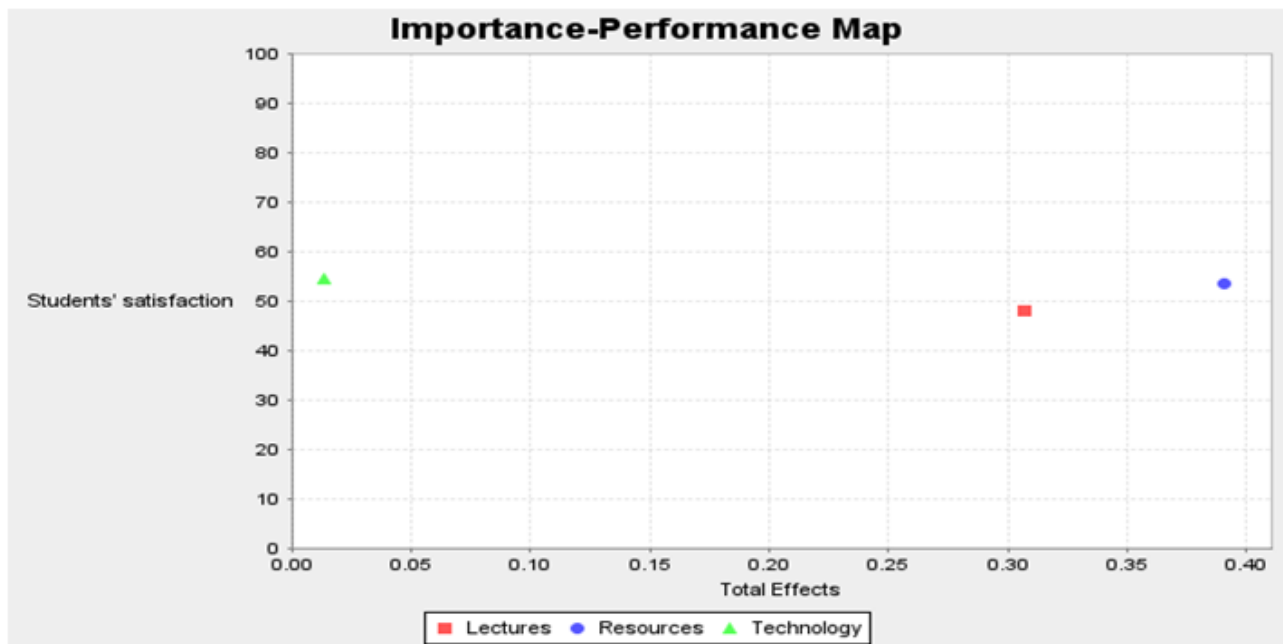


Fig. 5. Importance performance map

Source: Developed by the authors.

Table 1

Demographic characteristics

Items	No.	%
Gender		
Male	29	25.89
Female	83	74.11
Total	112	100
Age		
<20	25	22.27
21–40	80	71.42
>40	7	6.31
Total	111	100
Nationality		
Omani	105	93.75
Non-Omani	7	6.25
Total	112	100
Major		
Accounting	38	3.93
Non-accounting	74	66.07
Total	112	100
Graduation		
Graduated	55	49.11
Not Graduated	57	50.89
Total	112	100

Source: Developed by the authors.

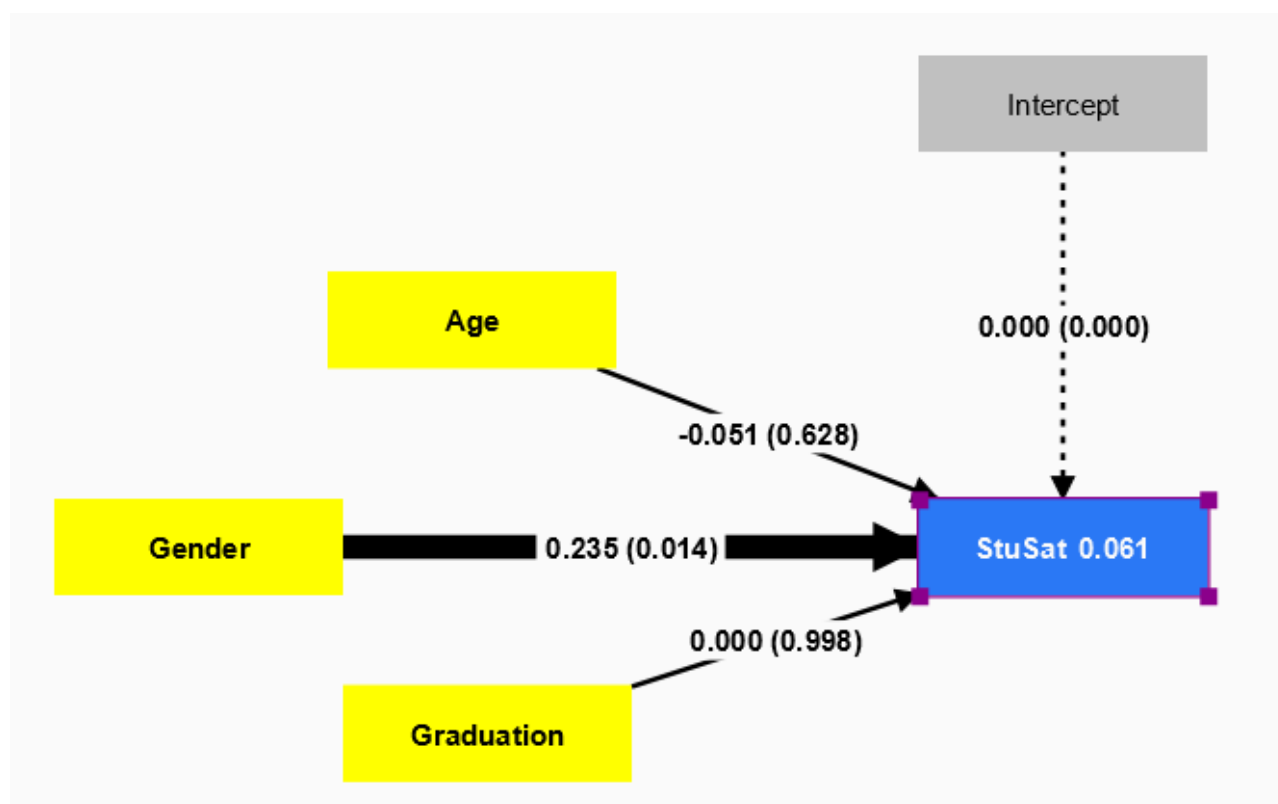


Fig. 6. Regression analysis result

Source: Developed by the authors.

Table 2  
Descriptive matrix

Variables	Mean	Median	SD	Excess kurtosis	Skewness	Obs	Cramér-von Mises test statistic	Cramér-von Mises p value
Intercept	0.000	0.000	0.000	n/a	n/a	12	9.333	.000
Age	1.839	2.000	0.510	0.397	-0.239	12	3.756	.000
Graduation	0.509	1.000	0.500	-2.035	-0.036	12	3.270	.000
Gender	0.741	1.000	0.438	-0.769	-1.116	12	4.888	.000
Students satisfaction	2.939	3.000	1.044	-0.659	-0.459	12	0.306	.000

Source: Developed by the authors.

servations (Obs), Cramér-von Mises test statistic, and Cramér-von Mises p-value. Age and gender correlate with satisfaction, with the 21–40 age group having the highest satisfaction levels. While graduation status did not significantly correlate with major, graduates' satisfaction was higher than that of non-graduates.

#### 4.2. Descriptive Statistics

Table 3 below labels evocative statistics. The mean regular of the reliance on variables, Students' Satisfaction, represents 2.917 with a standard deviation of 0.933. For the independent mutable, lectures factor, technology factor, and resource factor show an average of 3.141,

Table 3  
Descriptive Statistics

Variables	Mean	Min	Max	SD
Lectures	2.917	1.167	5.000	0.933
Resources	3.141	1.000	5.000	0.962
Students Satisfaction	3.025	1.193	5.000	0.880
Technology	3.185	1.000	5.000	0.940

Source: Developed by the authors.

Table 4  
Discriminant Validity

Variables	Lectures	Resources	Students Satisfaction	Technology
Lectures	0.783			
Resources	0.673	0.796		
Students Satisfaction	0.620	0.656	0.710	
Technology	0.526	0.707	0.487	0.794

Source: Developed by the authors.

3.025, and 3.185, respectively, and the standard deviation lectures factor, technology factor, and resource factor show 0.962, 0.880, and 0.940, respectively. The effectiveness of the lecture, technology, and resource factors will have an optimistic impact on higher education scholars.

#### 4.3. Discriminant validity construct

For challenging the validity of discriminant, there are standardized practicals. The origin of the square of every AVE for every variable must have a high link level, including the other variables. So, for the validity of the discriminant, as explained by [34], the root of the square of each variable in its AVE has to be compared with the variables' links for all other variables. The Discriminant Validity (dependent variable, Students' Satisfaction, and independent variables, which are lectures, technology, and resource factors) is in Table 4.

R Square ( $R^2$ ) is used to evaluate the structural model, also known as the inner model, for the endogenous elements. Start by looking at the  $R^2$  for the variable for latent endogenous constructs when evaluating the model with PLS. Endogenous components in the current study achieve an  $R^2$  value of 0.489, demonstrating

that 48.9% of the variance in Students' Satisfaction can be designated by two factors of higher education students: lectures, technology, and resource factors. The PLS results of R Square and R Square Adjusted are depicted in Table 5.

#### 4.4. Hypothesis Testing

Findings from the hypothesis testing are shown in Table 6 (Path Coefficients); two hypotheses are supported, and one is not supported. The outcome showed that the lectures and resources on higher education have a significant relationship with Students' Satisfaction, where it was  $P < 0.001$ ,  $t = 3.252$ ,  $P < 0.001$ , and  $P < 0.001$ ,  $t = 3.321$ . The fact that lecturers make the material engaging, are experts in their domains, present the material in an easily understood manner, and give them the impression that they know if they have issues that interfere with their ability to do their class-work could be the basis for supporting this hypothesis. Furthermore, the students received thorough and beneficial feedback, the library satisfied all of their learning needs, there were sufficient resources, and the course materials fulfilled all of their learning requirements. However, one of the influencing factors, technology, has no effect on students' satisfaction



Table 5  
Explanation of the Variance

	R Square	R Square Adjusted
Exogenous Variables -> Endogenous (Students' Satisfaction)	0.489	0.475

Source: Developed by the authors.

Table 6  
Path Coefficients

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Supported/Not Supported
Lectures -> Students' Satisfaction	0.326	0.322	0.100	3.252	0.001	Supported
Resources -> Students' Satisfaction	0.427	0.435	0.128	3.321	0.001	Supported
Technology -> Students' Satisfaction	0.014	0.021	0.116	0.124	0.901	Not Supported

Note: Significance levels: \*\*\*  $P < 0.001$  ( $t > 3.33$ ), \*\*  $p < 0.01$  ( $t > 2.33$ ), \*  $p < 0.05$  ( $t > 1.605$ ).

Source: Developed by the authors.

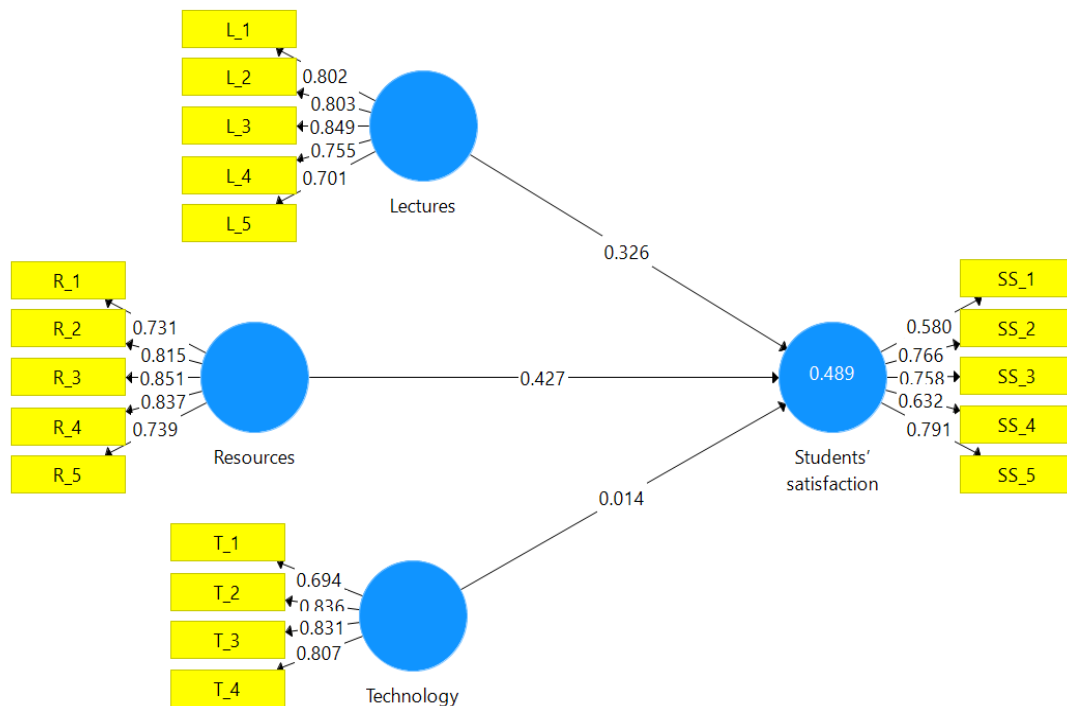


Fig. 7. Demonstrate the results of testing hypotheses

Source: Developed by the authors.

where it was  $P > 0.05$ ,  $t = 0.124$ . This adverse result can be attributed to students who need access to information and communication technology for research projects.

SEM-PLS results are shown in Fig. 7, the results of testing hypotheses.

## 5. Discussion

### 5.1. Impact of lecturing on students' satisfaction

One of the problems of the lectures is the need for more explanation and the weakness of the student's English language, which leads to the lack of understanding of the university textbook written in English and the student's lack of knowledge of the teacher.

This study result revealed that the lectures on higher education have an essential association with students' satisfaction, where it was  $p < 0.001$ . Consequently, the results of this investigation confirm the current study's first hypothesis. "*H1*: Lecturing has a positive impact on students' satisfaction". Likewise, [40] found the response value of the lecturer's presentation indicated a positive and substantial impact on student satisfaction. It was determined that the lecturer's performance positively and significantly impacted the Medicom Informatics and Computer Academy students' satisfaction.

### 5.2. Impact of university resources on students' satisfaction

Poor infrastructure is one of the problems with resources because it results in the university not having enough halls to accommodate the number of students present, and sometimes the requirements of the halls in terms of air conditioning and beautification, all of which lack the educational environment, so a budget must be set for the university's infrastructure, including its labs, workshops, halls, and the other requirements on which it is based on any institution of learning.

The result revealed that the university resources on higher education are significantly associated with Students' Satisfaction, where it was  $p < 0.001$ .  $H_2$ : University resources have a positive impact on students' satisfaction. Likewise, [41] found for students at Liverpool John, many of the bodily qualities of the university services are insignificant in terms of student happiness

according to Moores University (LJMU) students who are enrolled in the Faculty of Business and Law. This result is in line with earlier studies by [42, 43], all of which found that the core service, or lecture, was responsible for the most critical aspects of a university's service offerings, such as knowledge gaining, class notes and materials, and classroom delivery. Workshops, halls, and the other requirements on which it is based were also found to be responsible for these aspects of a university's service offerings to any learning institution.

Furthermore, the findings confirm earlier research by [44] that the university's physical facilities influence students' choices. The efficiency of the teaching and learning process is essential once you're here. The positive aspect is that LJMU has a cutting-edge learning resource center with numerous computer terminals connected to the Internet and prepared with the newest software. The Faculty of Business and Law also has a sizable information technology department and a brand-new classroom with cutting-edge technology. The Faculty of Business and Law may use these amenities to attract students, for example, during Open Days. Students are willing to put up with "wobbly tables" and paint peeling off walls to some extent as long as their instruction is satisfactory. Still, after enrolling, the quality of the teaching and learning will determine whether they are satisfied. This may impact the management group assigning funds to various university services and infrastructure components. The findings of this study support the valid premise of the current study.

### 5.3. Impact of technology at the university on students' satisfaction

One of the problems is that educational technologies require the use of the Internet, which may have some difficulty, or it may be available everywhere or in some homes, and the researcher may encounter a slow speed of the Internet, which may negatively affect students' academic achievement.

One of the influencing factors, technology, does not affect students' satisfaction where it was  $p > 0.05$ ,  $t = 0.124$ . " $H_3$ : Technology at the university positively impacts students' satisfaction". Likewise, [41] found that when it comes to amenities, students place a high value on

IT facilities, which reflects the importance of Internet access for research and package programs for creating excellent word-processed certification for coursework assignments and theses. This aligns with the Learning Resource Center's exceptional standing, where books and periodicals can be obtained in "hard" copy or electronic copy, and IT facilities are available.

## **6. Conclusion**

The main objective of this study is to determine how factors affect student satisfaction in higher education. To test the influence of student satisfaction factors at the student level, this study used two independent variables: (influencing factors and student satisfaction).

The information in this study was collected from a questionnaire containing a sample size of 112 answers, and it included 112 responses from students in different colleges/universities in the Sultanate of Oman. This study focuses on increasing and developing students' satisfaction (dependent variables) by relying on two factors (the independent variables, Lectures, and Resources). Both are related and linked to students' satisfaction. Therefore, both of them will contribute positively to students' satisfaction by exploiting the Lectures and Resources that appear in our survey data, which help to play a good role in developing students' satisfaction in a good way. In addition, we record the data that we obtain through the survey (our response).

Based on our responses, our study discovered that Lectures and Resources had a favorable impact on students' satisfaction. Additionally, this analysis showed a positive relationship between Lectures and Resources and Student Satisfaction. The research explains how the content and resources may affect students' satisfaction differently. Lecture factors students' satisfaction may rise with an increase in focus on (the resources and lecture factors), which become of significant influence in terms of their relevance (students' satisfaction increased), and which appear favorably and signify standards, leading to high optimistic results in students' satisfaction. The basis and effectiveness of the Resources and Lectures affect students' learning satisfaction. Studies may drastically alter by removing models with significant interest and high positive impact and being independent.

Higher education institutions in Oman depend on the knowledge that higher education requires theoretical skills, intensive courses that require scientific skills, the basic concept of education, the golden rules of education, and how to explain and communicate information to students. The lectures depend on the student's attendance and the teacher's performance, and the lecturers help the student perform well in the tests and understand the curriculum.

The university resources help the student adapt, be satisfied with the institution, study well in the university resources, and feel comfortable. Also, technology helps the student understand the curriculum easily through some programs such as the translator. Also, it allows him to solve and deliver his duties, perform his projects, and print his lessons.

The results and statistics of the respondents were viewed by searching for results (the Resources factors and Lectures factors). The validity between responses was measured, the standards were applied, and a positive relationship appeared in the responses when measuring how factors will affect students' satisfaction to deal with the distinct validity. In addition, hypotheses and results emerged only positively for the students. That means positive results significantly impact the students' satisfaction (this expresses a positive relationship and their influence on each other).

The result revealed that the Factors influencing students' satisfaction have a significant relationship with students' satisfaction. This result indicates that the Lecture factors significantly impact students' satisfaction. In addition, the findings showed that the resource factors have a significant relationship with the students' satisfaction.

Universities all over the world are currently competing for students on both national and international levels. They should raise student satisfaction and lower student dissatisfaction to attract and keep students. This is only possible if all services that support "academic life" are provided at a high level. Since students are the only ones who can determine whether or not this has been accomplished, regular student satisfaction polls should be conducted. A university's service offerings should be modified as necessary [41].

## 7. Implications

The importance of the variables affecting students' satisfaction at Oman's higher education institutions is emphasized in this study. It draws attention to the advantages of lectures, including better academic achievement, increased comprehension and concentration, and knowledge acquisition. This highlights how crucial it is to offer engaging lectures to help students learn and become ready for tests. The results of this study can aid other researchers' investigations into the variables affecting students' satisfaction in Oman's HEIs. It adds to the body of knowledge already in existence and supports the link between these elements and student satisfaction. Institutions can create teaching methods and styles that promote greater course comprehension by comprehending the relationship between factors affecting students' satisfaction. The study emphasizes how enhancing elements influencing student satisfaction, like lectures and resources, favorably impact students' overall contentment and choice of an academic institution.

Institutions can prioritize training and professional development programs for lecturers to improve their communication, engagement, and teaching methodologies. Institutions, including well-equipped classrooms, libraries, laboratories, and academic support services, should provide a favorable learning environment. It's crucial

to incorporate technology into the educational process properly. Institutions should invest in cutting-edge educational technology that improves learning results, encourages communication and teamwork, and offers easy access to library materials.

## 8. Limitations and future research directions

Due to the limited sample employed in the study, its generalizability may be constrained. It is crucial to remember that the conclusions are based on a particular demographic within HEIs in Oman, and they might not apply to all institutions or student groups generally. The students' academic performance participating in the study should have been considered. That may make it more challenging for the study to reach comprehensive findings. A broader and more varied sample from various Omani higher education institutions can be used in future studies. This would improve the findings' generalizability and enable comparisons across institutions, fields of study, and student demographics. To further understand the efficacy and practical consequences of specific methods or interventions, intervention studies that use them to improve the identified parameters might be conducted. This can assist schools in making decisions based on reliable data to increase student happiness.

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## Questionnaire

**A. Demographic Information:**

1. Gender
  - Male
  - Female
2. Age
  - 0–20
  - 21–40
  - Above 40
3. Nationality
  - Omani
  - Non-Omani
4. Your major
  - Accounting
  - Non-accounting
5. Graduation
  - Graduated
  - Not graduated

**B. Students Satisfaction**

The following statements indicate students' satisfaction. Give your responses by putting a tick (✓) mark in the appropriate column against statements on a five-point scale ranging from **Strongly Disagree (SD)**, **Disagree (DA)**, **Neutral (N)**, **Agree (A)** and **Strongly Agree (SA)**.

Sl No.	Statements	SD	D	N	A	SA
		1	2	3	4	5
B.1.	So far, my course has met all of my expectations					
B.2.	I am very satisfied with my university and would definitely choose it again					
B.3.	My choice of university was a wise decision					
B.4.	My program offers good value for money					
B.5.	I would recommend my university to my friends					

**C. Lectures**

The following statements indicate about lectures or faculties in the university. Give your responses by putting a tick (✓) mark in the appropriate column against statements on a five-point scale ranging from **Strongly Disagree (SD)**, **Disagree (DA)**, **Neutral (N)**, **Agree (A)** and **Strongly Agree (SA)**.

Sl No.	Statements	SD	D	N	A	SA
		1	2	3	4	5
C.1.	My lecturers make the subjects interesting					
C.2.	My lecturers are experts in their fields					
C.3.	My lecturers use language that I understand					
C.4.	I have as much contact with my lecturers as I need					
C.5.	My lecturers are sympathetic if I have problems that affect my work					

**D. Resources**

The following statements indicate university resources. Give your responses by putting a tick (✓) mark in the appropriate column against statements on a five-point scale ranging from **Strongly Disagree (SD)**, **Disagree (DA)**, **Neutral (N)**, **Agree (A)** and **Strongly Agree (SA)**.

Sl No.	Statements	SD	D	N	A	SA
		1	2	3	4	5
D.1.	I receive detailed and helpful feedback on my work					
D.2.	The library meets all of my learning needs					
D.3.	The course materials satisfy all of my learning needs					
D.4.	Technology is used to provide learning resources outside of lessons					
D.5.	I can always find a computer to work on when needed					

**E. Technology**

The following statements indicate the availability of technology in the university. Give your responses by putting a tick (✓) mark in the appropriate column against statements on a five-point scale ranging from **Strongly Disagree (SD)**, **Disagree (DA)**, **Neutral (N)**, **Agree (A)** and **Strongly Agree (SA)**.

Sl No.	Statements	SD	D	N	A	SA
		1	2	3	4	5
E.1.	All teaching/lab rooms have good internet facilities					
E.2.	All teaching/lab rooms have projector facilities					
E.3.	My lecturers use technology well in their computerized courses					
E.4.	I use information communication technology when undertaking research and to present my work					

**F. Suggestions, if any.****ABOUT THE AUTHORS / ИНФОРМАЦИЯ ОБ АВТОРАХ**

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**M.M. Thottoli** — assisted with the development of the conceptual framework, the design of the questions, the conduct of the data analysis, and implication of the study.

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**А.Н.А. Аль Варди** и **Е.Н.А. Аль Варди** (оба) — внесли вклад в подготовку введения, обзора литературы, обсуждения, заключения, а также разделов, посвященных ограничениям и будущим направлениям исследований. Они собирали данные, участвовали в разработке концептуальной схемы, составлении вопросов исследования, проведении анализа данных, составлении таблиц и интерпретации результатов.

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# Analyzing the Recording Practices in Accounting of Micro and Small Businesses: The Case of the Philippines

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## ABSTRACT

This study delves into the recording practices in accounting within micro- and small businesses, with the **aim** of addressing the neglect of proper practices due to factors such as limited knowledge and regulatory oversight. In these enterprises, accurate financial reporting is pivotal for informed decision-making, yet it is often impeded by inadequate recording practices. Using **methods** of qualitative analysis, the research offers insights specific to micro- and small businesses in Zamboanga del Sur, Philippines, illuminating both challenges and opportunities. Eight micro- and small business owners participated in semi-structured interviews, selected through purposive sampling, thereby providing rich data for case study analysis. The **findings** underscore the struggle of these businesses in maintaining accurate records, with outsourcing emerging as a potential solution. The study **concludes** by recommending training programs emphasizing proper record-keeping and advocating for government support through mandatory recording seminars. **Further research** is urged to deepen understanding and inform strategies for improvement in recording practices within micro and small businesses. This comprehensive exploration contributes to the literature by shedding light on a critical aspect of financial management in micro- and small enterprises, ultimately aiming to enhance their operational effectiveness and sustainability.

**Keywords:** accounting; recording keeping; double entry; bookkeeping; small business; micro business; Philippines

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ОРИГИНАЛЬНАЯ СТАТЬЯ

# Анализ практики ведения бухгалтерского учета в микро- и малых предприятиях на примере Филиппин

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## АННОТАЦИЯ

В данном исследовании проведен анализ практики ведения бухгалтерского учета в микро- и малых предприятиях **с целью** решения существующих проблем, обусловленных ограниченностью знаний и нормативного надзора. На этих предприятиях точная финансовая отчетность имеет ключевое значение для принятия обоснованных решений, однако этому часто препятствует неадекватная практика ведения учета. Используя **методы** качественного анализа, исследование дает представление о специфике микро- и малых предприятий в Замбоанга-дель-Сур (Филиппины), освещая как проблемы, так и возможности. Восемь владельцев микро- и малых предприятий, отобранных путем целенаправленной выборки, приняли участие в полуструктурированных интервью, что позволило получить необходимые данные для анализа.

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Полученные **результаты** подчеркивают трудности предприятий в ведении точного учета, и потенциальным решением становится аутсорсинг. Исследование **рекомендует** организацию программ обучения, направленных на внедрение правильного ведения учета, и обращение к государственной поддержке при проведении обязательных семинаров по ведению учета. **Дальнейшие исследования** необходимы для углубления понимания и разработки стратегий по улучшению практики учета в микро- и малых предприятиях. **Вклад** данного комплексного исследования заключается в критическом анализе важнейшего аспекта финансового менеджмента на микро- и малых предприятиях, направленного в конечном счете на повышение операционной эффективности и устойчивости предприятий.

**Ключевые слова:** бухгалтерский учет; ведение отчетности; двойная запись; финансовая отчетность; малый бизнес; микробизнес; Филиппины

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## 1. Introduction and literature review

Accounting literacy, particularly record-keeping, is essential in a business because it greatly affects the success and failure of its operation [1]. The authors highlight the need for businesses to have basic accounting and record-keeping knowledge, as it will benefit business decision-making and financial management. The recording and reporting of daily operations in a business using accounting techniques is crucial in monitoring cash flows, cost of production, assets, liabilities, and equity [1].

Effective record-keeping practices, specifically through cash, sales, and purchase daybooks, significantly enhance micro-enterprise performance. Governments and non-governmental organizations (NGOs) should encourage record-keeping in micro-enterprises for accurate business records, crucial in decision-making and goal attainment [2]. Gardi et al. [3] and Rumambi et al. [4] find financial statements to be the key business determinant. Business managers rely on accurate financial statements for problem-solving, planning, and decision-making to improve business outcomes.

Micro and small businesses, characterized by their limited scale and workforce, play a vital role in the economic landscape. Micro enterprises, defined by employing fewer than 10 individuals and generating annual incomes below ₱3,000,000,<sup>1</sup> are joined by small businesses, which typically employ up to 50 personnel and exceed the aforementioned income threshold. Accurate recording practices are essential for these entities, facilitating efficient financial management and informed decision-

making. Digital technologies enable businesses to transparently disseminate high-quality information, surpassing manual reporting methods [5]. Mannan et al. [6] highlight the challenge posed by a lack of accounting knowledge, particularly in financial reporting and bookkeeping for micro and small businesses. Their study reveals that Indonesian businesses struggle, leading to poor decision-making and business failure. Small and medium enterprises (SMEs) in the Makurdi metropolis faced inappropriate budgeting due to a failure in financial reporting [7]. Inadequate accounting knowledge results in incomplete records, hindering SMEs from reliably measuring their financial statements and contributing to business failure. Comprehensive accounting knowledge is imperative for SME owners to ensure sound accounting practices [8–10].

Micro and small businesses often lack essential accounting knowledge, resulting in inadequate record-keeping and financial reports, hindering effective management of assets and liabilities, and impeding business growth [11]. Zelig et al. [12] emphasize that the level of education, employee count, and transaction volume significantly influence accounting practices in small and medium enterprises. Adequate accounting knowledge, coupled with suitable staffing, contributes to positive accounting practices, fostering business growth.

The Republic of the Philippines adopted the International Financial Reporting Standard for Small and Medium-sized Entities (IFRS for SMEs) effective from January 1, 2010, known as the Philippine Financial Reporting Standard for SMEs (PFRS for SMEs). Entities with total assets ranging from ₱3,000,000 to ₱350,000,000 or total liabilities between ₱3 million and ₱250 million

<sup>1</sup> ₱ — Philippine peso sign.

are required to use the PFRS for SMEs. In March 2018, the Securities and Exchange Commission (SEC) approved the adoption of Philippine Financial Reporting Standards for Small Entities (PFRS for Small Entities) for small entities in their financial reporting. However, exceptions apply to entities operating in different countries with varying functional currencies. Micro entities are not obligated to file financial statements, but they have the option to utilize PFRS for Small Entities as their financial reporting framework. If chosen, the financial statements must include the Statement of Management's Responsibility, Auditor's Report, Statement of Financial Position, Statement of Income, and Notes to Financial Statements, covering two-year comparative periods if applicable.

In the Philippines, 99.6% of micro, small, and medium enterprises (MSMEs) operate under the Magna Carta of Small Enterprises (Republic Act 6977). Despite this, they are subject to income declaration laws and accounting standards imposed by the Bureau of Internal Revenue. According to Ibarra [13], 41.7% of MSMEs in Metro Manila claim to have sufficient knowledge about accounting principles.

The study is based on the Decision-Usefulness Theory of Accounting, focusing on decision-making processes in uncertain environments [14]. The research aims to describe and explain accounting recording practices in micro and small businesses, including software interference, compliance with Philippine Financial Reporting Standards (PFRS), encountered challenges, and strategies for managing them.

Specifically, the research aimed to describe the accounting recording practices of micro- and small businesses. The research will then explain the accounting recording practices used by the businesses, the interference of any software recording, the ways of complying with the requirements set forth by the Philippine Financial Reporting Standards (PFRS), the challenges encountered, and the ways of managing those challenges.

Despite existing studies on financial accounting in MSMEs, a research gap persists in understanding factors influencing insufficient knowledge of proper accounting records in micro and small enterprises. This study addresses the gap by aiding entities in organizing accounting records, specifically financial statements, to guide owners in future business transactions. It aims to enhance

our comprehension of micro and small businesses' accounting practices in recording transactions, offering guidance to business owners in their recording practices as integral aspects of their operations.

With all the gathered information, researchers studied the accounting standards of small and micro businesses in the Philippines or how small and micro businesses conduct record-keeping. Furthermore, the researchers aimed to help micro- and small businesses in record-keeping and accounting.

## 2. Research methods

The researchers used a case study in this qualitative research. Qualitative research is being undertaken because it explains a phenomenon whenever there is a lack of theory [15]. The research aimed to determine whether micro- and small businesses provide sufficient accounting records. The case mainly focused on micro and small businesses. The research was conducted in Zamboanga del Sur, Philippines. It is a province situated in the southern part of Mindanao. According to the data provided by the Department of Trade and Industry of the province, there are approximately more than 50,000 businesses in Zamboanga del Sur. This includes all existing micro-, small-, medium-sized and large-scale businesses. The research participants were the micro- and small business owners in Zamboanga del Sur. The researchers interviewed a selection using purposive sampling. Purposive sampling is a technique in which the selection depends on the researchers' judgment on which group can provide such information. Purposive sampling provided an appropriate match of the sample and the researchers' perspective regarding the research objectives, thereby improving the certainty of the research [16]. Participants were selected through purposive sampling based on specific criteria. Eligible businesses were registered with the Department of Trade and Industry and had been operational for at least one year. To ensure anonymity, participants were coded as P1 to P8.

In 2022, P1, a male owner, initiated a merchandise business, focusing on selling motorcycle parts with an annual income below P3 million. P2, a female co-owner, has managed a service business since 2013, overseeing sports facilities for vari-



ous indoor and outdoor events, with an annual income below P3 million. P3, a female proprietor, has operated a merchandise business for 5 years, retailing fruits and vegetables with an annual income below P3 million. P4, also a female owner, has run a merchandise business for 6 years, selling items in Sari-Sari stores with an annual income below P3 million. P5, a male co-owner, operates convenience stores with an annual income ranging from P3 million to P15 million, establishing their first branch in 2022 and a second in 2023. P6, a female owner, manages a merchandise business selling bakery products, considered one of the oldest bakeries in Zamboanga del Sur, with an annual income between P3 million to P15 million. P7, a female trusted branch personnel, oversees a merchandise business retailing bakery product for 7 years, with an annual income between P3 million to P15 million. Lastly, P8, a male owner, operates a merchandise business for 5 years, selling feeds, fertilizers, and insecticides with an annual income between P3 million and P15 billion. Each participant provided valuable insights into their respective businesses, contributing to the study's comprehensiveness. The researcher was the main source of the primary instrument, aided by an interview guide, used to collect the data. The research tool of the study for data collection was an individual semi-structured interview with open-ended questions, observational field notes, and mining data and documents. Interviews, observations, and documents were used to obtain the data. After the data was collected, it was organized, inventoried, and coded for easy retrieval. Intensive data analysis followed.

### **3. Results and discussion**

#### **3.1. Accounting recording practices of micro and small business**

Accounting practice defines the process and activity of recording the daily transactions of a business entity necessary to produce financial statements. Essentially, this is an integral part of an entity. Following the responses, two themes arose regarding the recording practices of micro and small businesses. The accounting recording practices of both micro- and small businesses mainly focus on the basic record-keeping and practicing separate entity concept.

*Basic record-keeping.* When asked about recording practices, all participants initially answered

that the recording of income and expenses was being practiced daily. In this sense, micro- and small-business owners record the outflow and inflow in the business in the most basic way. Basic record-keeping is defined in accounting as the process of recording a company's financial transactions. On the other hand, what is mostly answered by the participants as "basic" or "simple" recording practices, means income less expenses.

From the bookkeeper's perspective, micro and small business owners tend to record transactions in a basic manner, often not meeting accounting standards. Transactions are typically recorded in a notebook, with cash separated for receipts and expenses. Bookkeepers then organize these records into financial statements, with some owners requesting income understatement to reduce taxes. While some businesses meticulously record all transactions, others, particularly family-run ones, neglect proper recording. Owners with accounting knowledge generally maintain accurate records.

Micro businesses (P1–P4) use a single-entry method, recording sales directly in a notebook and expenses separately, although not consistently. One small business (P8) maintains accurate records, while others (P5–P7) struggle with receipt retention, leading to losses. Most micro businesses compute income simplistically, deducting costs from sales, but this cash-based approach overlooks accounting principles, risking financial information quality. To improve accuracy, businesses should enhance record-keeping practices and adhere to accounting standards.

Results align with prior research, indicating that many SME owners lack formal bookkeeping training, leading to cash-flow issues and insufficient financial literacy. Consequently, SMEs often rely on outsourced bookkeeping services due to cost-effectiveness and a lack of in-house expertise [17]. Despite limited knowledge, micro and small businesses demonstrate the ability to establish basic record-keeping practices. Efficient tracking of income and expenses proves vital for assessing operations, especially as businesses grow. Monitoring these financial aspects enhances profitability and furnishes essential information for sound business decisions [18].

*Practicing the Separate Entity Concept.* Being bombarded with different business transactions increases the risk of business owners being unable to separate personal and business transactions.

However, one of our participants can keep track of the transactions to avoid personal activities being recorded in the businesses.

Some businesses exhibit a practice of segregating their expenses from business transactions, aiming to maintain clarity between personal and business activities. However, errors arise when some clients inadvertently mix personal and business accounts, emphasizing the importance of accurate record-keeping. Bookkeepers stress the significance of adhering to the separate entity concept, crucial for precise financial records. This practice aids in measuring the business's performance independently. While not consistently followed by most micro and small businesses, those outsourcing bookkeepers benefit from timely reminders to uphold this essential practice.

The owner views the business entity as a going concern, emphasizing the crucial application of the separate entity concept. This concept distinguishes personal affairs from official business matters, categorizing personal expenditures as either receivables or withdrawals [13]. Given the susceptibility of micro- and small business owners to intermingle transactions, maintaining awareness of entity-specific transactions, excluding personal affairs, becomes paramount.

Aligning with the accounting concept of a separate entity, the business upholds the practice of viewing itself independently from the owners [19]. This ensures that the owner's transactions remain distinct from the entity's accounting records, safeguarding personal assets against financial liability.

### **3.2. Usage of accounting software and manual recording as methods for recording financial transactions**

As technology advances, record-keeping in accounting has evolved from manual paper-based recording to software technology. Micro- and small business owners tend to monitor the transactions of the businesses through recording. Manual recording means recording through writing, while accounting software requires the involvement of systems or computers. However, manual recording of the participants involves the use of *paper-based recording* and the intervention of the system only involves Point of Sale (POS) which means that there is *paper-based recording with Point of Sale (POS)* practiced by micro- and small businesses.

*Paper-based recording.* Most businesses practice single-entry recording. It is the use of a notebook or the like that can record business transactions. Paper-based recording is the most common recording method of micro and small businesses. This type of recording is not based on any standard but is just a recording which the owners are comfortable doing. All of the participants responded that, most of the time, transactions in their businesses are manually recorded. Provided below is the transcription of the responses of the participants.

As for the experiences of the bookkeeper, most micro and small businesses rely on manual recording of income and expenses, with bookkeepers receiving purchase, income, and expense listings typically recorded in notebooks and receipts. Limited utilization of accounting software is attributed to owners deeming manual recording sufficient for-profit understanding.

During interviews, owners presented receipts and notebooks illustrating business transactions, encompassing purchases, credit sales, and income. Challenges in this method include incomplete recording due to issues like loss of receipts. Manual bookkeeping is acknowledged to be error-prone and susceptible to the risks outlined by Amanah et al. [20], such as damage from water, fire, and other hazards.

Micro and small businesses often use manual recording, preferring cash-based methods in record books over systematic software. Limited accounting knowledge leads to a preference for simple, straightforward approaches to listing all financial transactions. Owners commonly favor manual methods due to unfamiliarity with software functions. The primary goal is to understand profitability, achievable through manual recording due to minimal transactions and product familiarity. Bookkeepers note that these businesses can effectively track income and expenses without extensive records.

There is flexibility in record-keeping methods as long as they accurately reflect the business's financial status. Micro and small businesses predominantly opt for manual bookkeeping, with some solely relying on it and others using a combination. Manual bookkeeping includes single-entry and double-entry methods, with the former favored for its simplicity, requiring basic accounting knowledge and uniform entries.

However, single-entry bookkeeping is deemed informal, recording only one business transaction, limiting its ability to provide a comprehensive financial picture [18, 21].

#### *Paper-based recording with Point of Sale (POS)*

A few micro and small businesses use accounting software in their businesses. Point of Sale (POS) is a device through which transactions with retail customers are processed. A POS system calculates a customer's purchase amount, adds sales tax, processes the payment and logs the time and date of the transaction. Since POS is accessible nowadays, it is not hard for some owners to engage it in their business. The most common POS is the cash register, which facilitates customer payments.

While Point of Sale (POS) systems are available, most micro and small businesses rely on manual recording instead of utilizing them. POS systems offer convenience by automatically generating reports of cash inflows from sales, aiding bookkeepers in creating cash flow statements. In contrast, small businesses often accept only cash payments, simplifying customer transactions and inventory cost reconciliation.

Despite the general costliness of POS for micro- and small businesses, some invest in it to streamline payment recording. POS reduces manual recording tasks and produces comprehensive sales data, minimizing the risk of loss or unrecorded transactions. It not only tracks daily and weekly sales but also manages inventory levels, enhancing efficiency, reducing human errors, and supporting forecasting based on profitable products [22]. This electronic system intervention complements manual recording practices in most businesses.

Ghasia et al. [23] note that SMEs in Mtwara-Mikindani Municipality use both paper-based and electronic systems in their businesses, complementing each other as manual records serve as backups for electronic systems, and vice versa, reducing lapses in their business transactions.

### **3.3. Means to comply with the Philippine Financial Reporting Standards**

PFRS requirements for small businesses emphasize fair presentation and full disclosure in financial statements, while micro businesses aren't mandated to follow PFRS. However, micro businesses can choose either the income tax basis or PFRS for Small Business as their reporting

framework. The study includes micro business owners due to this framework flexibility.

Required financial statements per PFRS include: (1) Statement of Financial Position, (2) Statement of Financial Performance, (3) Statement of Cash Flows, (4) Statement of Changes in Equity, and (5) Notes to Financial Statements.

Most businesses, especially micro- and small-business owners, don't fully comply with PFRS requirements. The subcategories observed are: (1) No financial statements prepared, and (2) Preparing the supporting documents for financial statements. Compliance is minimal among these businesses.

*No financial statements prepared.* As mandated by the PFRS, this approach is prevalent among micro and small business owners due to their limited knowledge of PFRS requirements. Hiring a bookkeeper becomes essential for adherence to these standards.

Supported by bookkeepers, micro and small business owners lack the knowledge and resources to adhere to accounting standards for financial statement preparation, so they rely on cash basis recording. Non-compliance with PFRS requirements is evident, as they focus on recording sales and expenses to gauge business profit. Micro businesses, constrained by cost, often forgo hiring a bookkeeper for financial statements, but their potential benefits are highlighted. The misconception that financial statement preparation is solely for larger entities persists due to limited awareness of PFRS among some businesses.

The results align with Kahsay and Zeleke's [24] findings that many small businesses struggle with initiating business records due to a lack of knowledge. Owners choose recording methods based on preference, often without adherence to any accounting standards, as not all have attended introductory accounting seminars. Musah and Ibrahim [25] noted a reliance on memory, neglecting proper bookkeeping.

*Preparing the supporting documents for financial statements.* However, several micro and small businesses gradually comply with the requirements set forth by the PFRS by outsourcing bookkeepers. Although the business submits no financial statements, the business transactions are forwarded to the bookkeeper, allowing them to produce financial statements. This is primarily for tax purposes.

Micro- and small businesses commonly outsource financial statement preparation for tax



purposes. Bookkeepers compile statements diligently using receipts provided by owners. Limited financial resources prompt businesses to seek cost-effective solutions, often engaging bookkeepers from consulting services on a pay-as-needed basis. High bookkeeper salaries, ranging from ₱23,000 to ₱33,000 per month, pose a significant deterrent, especially when quarterly profits exceed ₱50,000.

SME owners lack bookkeeping knowledge, leading to cash flow issues and reliance on outsourced bookkeepers [17]. The decision usefulness theory supports financial statement preparation even for micro businesses, aiding decision-making. Micro businesses benefit from tracking earnings, determining mark-ups, covering costs, and informing strategic decisions through financial statements. Financial reporting is crucial for MSMEs to assess performance, make informed decisions, and enhance competitiveness [26].

### 3.4. Challenges in preparing financial statements in compliance with the PFRS

Challenges and uncertainties are expected to occur in preparing financial statements. As risk is inherent in business, it is not surprising for micro- and small businesses to encounter challenges. In compliance with the full disclosure of financial statements, businesses are not able to keep up with its requirements. For micro- and small businesses, it is about failure to record some transactions and records that do not match. These are separated into two themes: *unrecorded transactions* and *unmatched records*.

*Unrecorded Transactions.* Since micro- and small businesses record their financial statements mainly through manual paper-based recording, tendencies for unrecorded transactions usually happen. The reasons for these challenges are the shortcomings of the owners or management in recording the transactions immediately. Unrecorded transactions in the business involve the inability to keep financial records. These are lost receipts, misstatement of the amounts, and failure to record some transactions. For a business, these are prominent struggles.

During interviews, owners acknowledged the possibility of unrecorded transactions due to reasons such as loss, forgetfulness, or negligence. Businesses primarily rely on notebooks for recording, increasing the likelihood of omissions compared to systematic approaches.

Bookkeepers recognize this as common and highlight challenges arising from incomplete records, particularly when receipts are lost. The entity's discretion significantly influences the accuracy of transaction records, a factor beyond bookkeepers' control.

Tax considerations sometimes drive entities to intentionally manipulate income and expenses to minimize business taxes as they near the minimum threshold. This intentional misalignment can create discrepancies between the bookkeeper's records and those of the entity. Bookkeepers view this practice as poor record-keeping and may refrain from reconciling such discrepancies.

Micro and small businesses face challenges in daily transactions, leading to lapses and shortcomings, highlighting internal control risks. The importance of recording every transaction is emphasized for future reference and financial tracking. Unrecorded transactions indicate poor record-keeping, a widespread challenge for small entities globally. To address this, micro and small business owners should acquire essential accounting skills, aiding bookkeepers in financial statement preparation. Proficient recording enhances business assessment, identifying strengths and weaknesses crucial for growth. Many small businesses effectively manage bookkeeping with basic accounting skills, contributing to business development [21].

*Unmatched records.* Some micro- and small businesses do have a system, particularly a POS, for recording business transactions with back-up paper-based records. With this practice, problems with regards to differences in records between the system and manual could occur. These errors mainly result from misstatements of amounts or the inability to record transactions in both recording practices.

Discrepancies between cash on hand and recorded cash, identified in manual and system logs during data mining, were considered immaterial by the owner, who opted to disregard them. Bookkeepers acknowledged such occurrences as common in micro and small businesses, where manual recording may lead to errors in inventory, sales, and orders. This internal control issue underscores the necessity for reconciliation to avert potential business failure. Mismatched records, prevalent in businesses, can stem from both significant and minor errors. Regular monitoring



during daily operations helps mitigate these issues, ensuring errors are minimized and manageable. While periods of high activity may contribute to unintentional recording errors due to the necessity for prompt customer service, owners typically recognize and address these challenges.

Inherent challenges in recording are inevitable in business, acknowledged by owners and confirmed by bookkeepers. Decisive actions by owners, supported by regular monitoring and transparent reporting, help mitigate these risks and contribute to sound financial management, crucial for sustaining business growth [1].

### **3.5. Ways of managing the challenges encountered in compliance with the PFRS**

As businesses are associated with risk, they were expected to be prepared for the challenges that were encountered. The participants' ways of managing transactions are *back-tracing* and *regular monitoring*.

*Back-tracing.* A way of managing challenges in a business is by verifying transactions by tracing back the date and time they happened. Transactions are validated, problems are identified, and resolved.

Bookkeepers advise tracing back as a solution for managing unrecorded transactions, lost receipts, and inventory errors in micro and small businesses. Despite limited awareness of business challenges, appropriate recording is emphasized. Outsourced bookkeepers in these businesses prioritize meeting owners' needs. Participants stress the importance of tracing back through receipt review, though some rely on memory due to accounting awareness gaps. Overall, micro and small businesses commonly use tracing back to address previous transaction issues and enhance operational efficiency.

The results align with prior research emphasizing the critical role of accurate receipts in tracking sales and income. Micro and small businesses prioritize comprehensive record-keeping for every transaction to monitor progress and production, acknowledging its centrality as indicated in previous studies [27, 28].

*Regular monitoring.* Since shortage or loss is the most common challenge in businesses, some owners regularly monitor the business activities. Because of this, owners would conduct a random count of the inventory or at least check

the progress of the sales from time to time. This can help the owners gradually check common mistakes.

Business owners commonly engage in regular monitoring, a discretionary practice vital for maintaining accurate inventory, sales, and purchase records. According to outsourced bookkeepers, this proactive approach is deemed essential, aiding in reconciling daily activity errors and minimizing future recording and production issues.

Observation reveals that businesses with regular monitoring exhibit a more organized flow of daily operations, facilitating the detection and management of overdue accounts, miscalculations, and discrepancies in financial records.

Conducting regular check-ups in business activities aligns with prior research, reducing internal control risks. For business owners, implementing well-designed controls poses a challenge, but neglecting discrepancies and deficiencies exposes them to operational and financial risks [29]. Regular physical count allows participants to identify shrinkage problems, make informed decisions, maintain accurate inventory information, and enhance control, leading to increased operational efficiency [30].

## **4. Conclusion**

The study provided an overview of the accounting recording practices of micro- and small businesses. The findings revealed that the recording practices of micro- and small businesses involve basic record-keeping, which is mostly paper-based with minimal system intervention. Micro- and small businesses are not capable of complying with the requirements set forth by the PFRS unless an outsourced bookkeeper is involved. Furthermore, inherent risks in recording transactions occur, but they are alleviated through monitoring and tracing.

The study concludes that most micro- and small businesses have a below average capacity with regards to recording practices in accounting. The study highlighted the need for micro- and small businesses to maintain accurate records of transactions to comply with accounting standards and generate financial statements that aid in assessing business performance. Ultimately, micro and small businesses must prioritize adopting modern technologies and expert accounting services to enhance their financial management.

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***Authors' declared contribution:***

**A.S. Borrromeo** — initiated the study, conducted literature review, provided descriptions and analyses of research results, formulated conclusions, composed the abstract, prepared request letters for respondents and school heads, and defined the scope and limitations of the study.

**R.J. Cervantes** — requested data on business owners from the Department of Trade and Industry, prepared the list of resources, and formulated the research methods.

**E.H. Sumicad Jr.** — reviewed and verified the study, provided recommendations for improvement, and served as an advisor throughout the entire research process.

***Заявленный вклад авторов:***

**А. С. Боррмео** — инициировал исследование, провел обзор литературы, представил описание и анализ результатов исследования, сформулировал выводы, составил аннотацию, подготовил письма-запросы для респондентов и руководителей школ, определил рамки и ограничения исследования.

**Р. Дж. Сервантес** — запросил данные о владельцах бизнеса в Департаменте торговли и промышленности, подготовил список ресурсов и сформулировал методы исследования.

**Э. Х. Сумикад-младший** — проанализировал и проверил исследование, дал рекомендации по улучшению и выступал в качестве консультанта на протяжении всего процесса исследования.

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# Using Machine Learning to Unveil the Dynamics of Insider Trading in Financial Markets

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## ABSTRACT

The **subject** of this study is the insider trading behaviors within the US financial markets, with a focus on transactions by politicians and public officials, and their implications for global economic stability. The **purpose** is to investigate and analyze these transactions for ethical and legal challenges, and to evaluate their potential impact on market integrity and investor trust. The **relevance** of this research arises from the substantial influence these figures have on market dynamics, the legal nuances involved in their financial activities, and the broader implications for market transparency and fairness. The **scientific novelty** is established using econometric modeling and data analytics, particularly the analysis of trading behavior that potentially circumvents the Stop Trading on Congressional Knowledge (STOCK) Act. The **methods** employed include a Python tool to extract data from financial disclosures and ordinary least squares (OLS) regression to analyze key indicators of insider behavior. The **results** indicate a significant proportion of trades, approximately 86.67%, were conducted by politicians with noted STOCK Act violations, highlighting a potential gap in the enforcement of current laws and reporting standards. The authors **concluded** that the findings call for stricter law enforcement, a reevaluation of reporting standards, and comprehensive financial disclosures to maintain market integrity, alongside an urgent need for improved regulatory measures and enhanced transparency mechanisms to mitigate the risks associated with insider trading by individuals in positions of power.

**Keywords:** insider trading; US financial markets; STOCK Act; market transparency; integrity in finance; econometric models; political trading analysis; ethical financial practices; S&P 500 Index; Microsoft Corp; data analysis; regulatory compliance

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## ОРИГИНАЛЬНАЯ СТАТЬЯ

# Использование машинного обучения для раскрытия динамики инсайдерской торговли на финансовых рынках

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## АННОТАЦИЯ

**Предметом** данного исследования является поведение инсайдеров на финансовых рынках США, с акцентом на операции политиков и чиновников, и его последствия для глобальной экономической стабильности. **Цель** исследования — изучить и проанализировать эти сделки на предмет этических и правовых проблем, а также оценить потенциальное влияние на целостность рынка и доверие инвесторов. **Актуальность** исследования обусловлена значительным влиянием этих фигур на динамику рынка, юридическими нюансами, связанными с их финансовой деятельностью, и более широкими последствиями для прозрачности и справедливости рынка. **Научная новизна** исследования достигается за счет использования эконометри-

ческого моделирования и анализа данных, в частности, анализа торгового поведения, которое потенциально может обойти Закон о прекращении торговли на основе знаний Конгресса (STOCK). Применяемые **методы** включают инструмент Python для извлечения данных из финансовых деклараций и регрессию по методу обыкновенных наименьших квадратов (OLS) для анализа ключевых показателей поведения инсайдеров. **Результаты** показали, что значительная часть сделок, около 86,67%, была совершена политиками, имеющими нарушения Закона STOCK, что указывает на потенциальные пробелы в применении действующих законов и стандартов отчетности. Авторы пришли к **выводу**, что полученные данные требуют ужесточения правоприменения, переоценки стандартов отчетности и всестороннего раскрытия финансовой информации для поддержания целостности рынка, а также настоятельной необходимости совершенствования мер регулирования и механизмов повышения прозрачности для снижения рисков, связанных с инсайдерской торговлей со стороны лиц, занимающих руководящие посты.

**Ключевые слова:** инсайдерская торговля; финансовые рынки США; закон STOCK; прозрачность рынка; целостность финансов; эконометрические модели; анализ политической торговли; этические финансовые практики; индекс S&P 500; корпорация Microsoft; анализ данных; соблюдение регуляторных требований

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## 1. Introduction

This research paper focuses on the phenomenon of unethical insider trading, specifically the trading of public assets in financial markets by congressmen who may have obtained knowledge about certain events before their public release. The research has revealed the multi-dimensional nature of this issue and its profound implications. The strategic aspects of trading, particularly concerning unobservable information acquisition, are elucidated by Banerjee and Breon-Drish [1], who provide insights into the nuanced strategies employed by insiders. Similarly, Balogh [2] contributes to the empirical understanding of these covert activities, highlighting the criticality of insider stock sales and purchases in revealing information about a firm's business prospects.

The role of macroeconomic uncertainties in influencing opportunistic insider trading is examined by Cai et al. [3]. Their work suggests that broader economic conditions can significantly affect such activities. Chirkova and Petrov [4] examine insider trading dynamics in the context of administrative pressures on businesses, providing insight into how corporate events influence insider behavior. The legal framework and enforcement efforts surrounding illegal insider trading are critically analyzed by Cline and Poslynnaya [5]. Their research underscores the vital role of regulatory bodies like the U.S. Securities and Exchange Commission (SEC) in curbing insider trading, while also questioning the effectiveness of current regulatory measures. Similarly, Cziraki and Gider [6] explore the economic aspects of insider trading, revealing a gap between expected and actual

gains, thereby raising questions about the efficacy of existing regulations. The intricate relationship between political connections and insider trading is investigated by Harvison [7]. Expanding on this, He and Marginson [8] discuss the broader market impact of insider trading, particularly its influence on analyst coverage and forecasts, thus highlighting the significant consequences of such activities.

Comparative analyses of insider trading regulations, especially between the US and EU, are presented by Jardak and Matoussi [9] and Kang [10]. These studies provide valuable insights into the differences in regulatory frameworks and their effectiveness in different jurisdictions. Additionally, the novel methods for detecting insider trading in high-frequency trading environments, as discussed in the literature watch by Charles River Associates,<sup>1</sup> underscore the need for advanced surveillance techniques in today's fast-paced trading environments. Biggerstaff, Cicero, and Wintoki [11] revisit the information content of stock trading by corporate insiders, providing new evidence that insider trades predict abnormal stock returns. They also explore insiders' trading strategies, highlighting how insiders attempt to maximize their trading profits.

The concept of indirect insider trading is further explored by Goldie et al. [12], who demonstrate that indirect trades through controlled accounts tend to be more profitable and informative than direct

<sup>1</sup> Insider Trading & Market Manipulation Literature Watch: Q4 2022. Charles River Associates. 2023. URL: <https://www.crai.com/insights-events/publications/insider-trading-market-manipulation-literature-watch-quarter-4-2022/> (accessed on 19.01.2024).

trades. They also show that these trades are often executed by opportunistic insiders who engage in nonroutine trading or trade profitably before earnings announcements.

Finally, Guay, Kim, and Tsui [13] assess the economic determinants of insider trading windows, exploring how company-imposed insider trading restrictions reflect concerns about information asymmetry and the strength of external monitoring.

Despite the extensive research, gaps remain in understanding the specific implications of political influence on insider trading and the effectiveness of current regulations in different market environments. This study aims to bridge these gaps by investigating the nuances of insider trading activities among political figures and public officials in the US financial markets, focusing on their ethical and legal challenges and the subsequent impact on market integrity and investor trust.

With the increasing relevance of machine learning, it is important to consider how these technologies can be implemented into the current system to enhance the stability and safety of all market participants.

## **2. Literature review**

The topic of insider trading, which is crucial in financial markets, has been extensively researched, revealing its multi-dimensional nature and profound implications. Banerjee and Breon-Drish [1] examine the strategic aspects of trading, with a focus on the acquisition of unobservable information. Their work provides insights into the nuanced strategies used by insiders to leverage non-public information for profitable trading. Balogh [2] provides important data on insider trading, offering an empirical basis for understanding these covert activities.

Back, Crotty, and Li [14] identify information imbalances that enable insider trading when studying market asymmetries, highlighting the difficulties in ensuring market fairness. Cai et al. [3] investigate how macroeconomic uncertainties affect insider trading, suggesting that broader economic conditions can either exacerbate or mitigate such activities. Chirkova and Petrov [4] investigate insider trading in the context of administrative pressures on businesses, providing an insight into how corporate events affect insider behaviour.

Chirkova and Agamyan [15] expand on this analysis to include the Russian stock market, particularly

in relation to mergers and acquisitions. Their research emphasises the worldwide nature of insider trading, demonstrating its prevalence across various market structures.

Cline and Posylnaya's [5] research on illegal insider trading highlights the SEC's efforts in detection and deterrence. The authors stress the crucial role of regulatory bodies in mitigating insider trading and analyze how recent legal actions affect insider decisions. Cziraki and Gider [6] focus on the economic aspects of insider trading, revealing a gap between expected and actual gains from such practices, which raises questions about the effectiveness of current regulatory measures.

Harvison [7] examines the relationship between politics and insider trading, suggesting that political connections may provide a protective shield against regulatory scrutiny. Harvison's findings are supported by Marginson [8], who discusses the wider market impact of insider trading, including its effect on analyst coverage and forecasts. This highlights the significant consequences of such activities.

Jardak and Matoussi [9] compare insider trading disclosure policies in the US and EU, highlighting the differences in regulation and transparency. Kang's analysis [10] further explores these differences and evaluates the effectiveness of the regulatory frameworks.

In the area of high-frequency trading, Kritsky and Glik [16] present novel methods for detecting insider trading. Their work is particularly relevant in fast-moving trading environments where traditional surveillance techniques may be insufficient.

## **3. Methods**

The study employed a comprehensive methodology to examine market trends and the actions of political figures in financial markets, with the goal of identifying instances of potential insider trading or other unethical behaviour. The primary focus was on the S&P 500 Index and Microsoft Corp (Ticker: MSFT) stock.

The aim was to identify patterns in the movement of Microsoft's stock price and the S&P 500 that may indicate questionable behaviour.

A Python software tool was developed to collect and assess the required data by operating as a web scraper. The tool extracts financial disclosures related to politicians' transactions from the capitoltrades.com website. The web scraper has been configured to collect trading data for all American politicians

who buy and sell Microsoft Corporation stocks. This enables an evaluation of the potential gains or losses obtained between the date of the trade and the date of filing, during the time period from February 15, 2021, to January 12, 2023.

A total of 443 transactions were extracted. The source code for it is provided in the exhibit named “Parser-InsiderTradePol.py”<sup>2</sup> as well as its output listed in the exhibit “capitoltrades\_data.xlsx”.<sup>3</sup>

The analysis begins by using the data from “capitoltrades\_data.xlsx” by excluding stock trades that have a value for “SIZE” that is “>0” and focusing solely on purchases. The subsequent section investigates cases where insiders trade against the market by buying stocks during a downward trend in the S&P 500 index. However, insiders can still profit during the period between the transaction and the filing of reports, as well as when the stock price begins to rise. Microsoft Excel spreadsheet functions are used to identify unique trade scenarios.

Excel is utilised to filter, examine and correlate data in depth, facilitating statistical analysis and result interpretation. Throughout this process, we ensure that all data is transparent and accessible for analysis, as demonstrated in the exhibit ‘MSFT-Analysis.xlsx’.<sup>4</sup> The study aims to capture the latest market trends and rapidly shifting money movements that may indicate potentially illicit gains. The method relies on daily stock price data to detect short-term insider trading. It is worth noting that weekly or hourly data may not accurately reflect rapid market reactions to news events or political decisions, and therefore may be less relevant.

The significance of selecting daily data is confirmed by its extensive use in financial analysis and trading, where it serves as the basis for decision-making by most market participants. Such data enables more precise monitoring of market trends, allowing for a more thorough examination of insider behaviour. This includes potential exploitation of privileged information, as well as exploiting loopholes and intransparencies to generate personal illicit gains. Thus, the methodology of the study

employs a balanced combination of automated web scraping, detailed statistical analysis, and application of econometric models in Excel, which jointly offer high reliability and in-depth analytical conclusions.

The study investigates the influence of insider trading on market indicators and analyses its synchronization using the S&P 500 index as a case example.

The study employs the following key indicators:

**1.  $\Delta I_t$  ( $\Delta$ Insider — Time period (Trade / Publication)):**

This indicator measures the change of the stock price (Microsoft corporation) from the time of the trade to the time of the statement’s official publication. It suggests the possibility of the use of confidential data before public disclosure as well as an indicator for potential gains.

**2.  $\Delta S\&P_t$  ( $\Delta$ S&P — Time period (Trade / Publication)):**

This indicator shows the change in the performance of the S&P 500 index during a similar time frame. This indicator analyses the market response period between an insider trade and its subsequent public release. It offers an understanding of how the market reacts to insider trading and the potential effects of such trading on market trends.

**3.  $S_t$  (SIZE — type):**

This indicator measures the type and volume of insider trade, which can enhance comprehension regarding insider activity under specific market conditions. If negative, it means that there was a buy order since the politician spends money, depending on the size of its order, it may vary from –10 to 10. –10 being a big buy and 10 being a big sell (in this research paper we are focusing solely on purchases thus being all negative values from –1 to –10).

For the analysis, we used the data presented in *Table 1* using the OLS method, which allows the values of the regression coefficients to be predicted using a multiple regression equation. Consequently, we hypothesise that the modification of independent variables specified prior, indicated by coefficients ( $\beta$ ), exerts a collective effect on the indicators of insider activity. While acknowledging the possible occurrences of unexplained variability in insider trading data ( $\epsilon$ ) not accounted for by these factors.

It is crucial to note that not all exogenous variables considered in this model are associated with market dynamics. Therefore, their influence cannot be evaluated merely based on market performance dependence analysis. For obtaining dependable,

<sup>2</sup> parser-insidertradepol.py — [https://drive.google.com/file/d/1YQXNdQ\\_LrNqzDFNj\\_O1SIPWcbfTX7Z-k/view?usp=sharing](https://drive.google.com/file/d/1YQXNdQ_LrNqzDFNj_O1SIPWcbfTX7Z-k/view?usp=sharing)

<sup>3</sup> capitoltrades\_data.xlsx — [https://docs.google.com/spreadsheets/d/18TGxpy5kKb9j-kfAYXNuFx8S\\_4fbtuZtV/edit?usp=sharing&oid=108954168103873559919&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/18TGxpy5kKb9j-kfAYXNuFx8S_4fbtuZtV/edit?usp=sharing&oid=108954168103873559919&rtpof=true&sd=true)

<sup>4</sup> MSFT-Analysis.xlsx — [https://docs.google.com/spreadsheets/d/10OYD\\_xogzanu34SdksUZU\\_lr9IrfVggX/edit?usp=sharing&oid=108954168103873559919&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/10OYD_xogzanu34SdksUZU_lr9IrfVggX/edit?usp=sharing&oid=108954168103873559919&rtpof=true&sd=true)



Table 1  
Research indicators

$\Delta I_{insider}$ – Time period (Trade / Publication)	$\Delta S\&P$ – Time period (Trade / Publication)	SIZE – type
$\Delta I_t$	$\Delta S\&P_t$	$S_t$
0,02%	-4,49%	-0,8
0,34%	-3,40%	-0,8
0,34%	-3,40%	-0,7
4,97%	-3,25%	-0,2
4,55%	-3,85%	-0,2
4,55%	-4,07%	-0,2
1,88%	-3,00%	-0,4
1,35%	-1,62%	-0,8
1,35%	-1,62%	-0,7
1,35%	-1,62%	-0,7
1,35%	-1,62%	-0,7
1,35%	-1,62%	-0,8
1,35%	-1,62%	-0,3
1,79%	-1,62%	-0,5
1,79%	-0,78%	-0,2

Source: Data from MICROSOFT the Corporation (MSFT) the S&P and Size types (buys) to build the model.

objective, and consistent estimates of regression coefficients, it is vital to introduce these variables into the equations.

Therefore, the introduced indicators  $\Delta I_t$ ,  $\Delta S\&P_t$ , and  $S_t$  will be vital in evaluating potential insider trading and its influence on market behaviour, thereby offering a valuable contribution to comprehending the correlation between insider trades and market instability.

### 3.1. Model development

The analytical model was developed by first acquiring a complex dataset from capitoltrades.com through a web scraping process. The website publishes financial disclosures made by SEC policy makers. The retrieved data was then subjected to pre-analysis and cleaned using Excel filtering functions to remove inaccuracies (values like “N/A”), or incomplete statements that occurred due to the incomplete provided data on capitoltrades.com, and prepare it for further analysis. The final cleaned data are shown in Table 1.

Several methodological approaches were then evaluated to identify potentially suspicious behaviour from an econometric perspective. Through the analysis of different data combinations, we determined the most efficient method for identifying the specified behaviour. Hypotheses were formulated regarding various types of suspicious behavioral patterns. The most rational hypothesis, which is discussed in this research paper, focuses on trades conducted by individuals that are counterintuitive to market dynamics (e.g., a buy order while the market is falling).

The identified pattern was then applied to filter the Microsoft trading data after filtering.

This enabled the creation of the subsequent regression model:

$$\begin{cases} \Delta I_t = \beta_0 + \beta_1 \cdot \Delta S\&P_t + \beta_2 \cdot S_t + \varepsilon_t \\ E(\varepsilon_t) = 0; \\ \sigma(\varepsilon_t) = \text{const} \end{cases}$$

This model is a multiple regression equation that relates the change in insider behaviour ( $\Delta I_t$ ) to the change in the S&P 500 index during the relevant period ( $\Delta S\&P_t$ ) and the size and type of the trade ( $S_t$ ). The model incorporates  $\varepsilon_t$  as the random error with a mean of zero and constant variance.

We utilised the model to study data from one of the biggest percentage holders of the S&P 500 index (Microsoft) to uncover specific trends and patterns. Through conducting a thorough analysis based on the obtained data, we were able to confirm or refute the initial hypotheses concerning insider trading. This led to the development of an objective comprehension of the mechanisms pertaining to market dynamics as well as the possible exploitation of insider information within the stock trading realm.

#### 4. Results

To develop our econometric models, it is important to analyse the dynamics of financial markets in a systematic manner. This analysis helps to reveal the complex interactions between insider trading activities and overall market performance, using rigorous statistical methods to uncover underlying patterns. Our approach is grounded in empirical evidence and systematically decodes these relationships, providing insights into the mechanisms driving market movements.

Our robust regression model, calibrated to decipher the complex relationship between insider trading activity, captured by the variable  $\Delta I_t$ , and the ebb and flow of the S&P 500 index, denoted as  $\Delta S\&P_t$ . The strength of this relationship is conveyed by a multiple correlation coefficient of 0.850653, signaling a potent liaison between our chosen variables and the nuanced realm of insider trading.

The R Square value of the model is 0.723601, indicating its robustness in explaining the variance within the data set and highlighting its significant predictive capability. It tells us that a substantial portion of the variance in insider trading is illuminated by the variables we have included into the model. The adjusted R Square, only slightly less at 0.673357, maintains the narrative of a well-fitting model, even when adjusting for the predictors' quantity.

Emerging from the data is an inverse relationship, subtle yet significant. The coefficient for  $\Delta S\&P_t$  stands at a nuanced  $-0.032537816$ , signaling that as insider trading activity increases, the S&P index tends to sway in the opposite direction. However, the statistical significance of this is not quite on point, as

reflected by the t-statistic and p-value. This suggests that insider trading's choreography isn't wholly in lockstep with the broader market indices.

Trade characteristics, represented by  $S_t$ , take center stage with a direct and statistically significant impact on insider trading activity. The value of the coefficient at 0.055013034, along with a commanding t-statistic, underlines the importance of trade size and type in the grand performance of market dynamics. This finding reinforces the narrative that insider transactions are more than reactionary — they are deliberate moves performed with strategic intent.

Our model's statistical rigor is further affirmed by a towering F-Statistic of 14.39942643. The corresponding p-value, close to zero, dismisses the null hypothesis, heralding the explanatory power of our independent variables. Meanwhile, the standard error whispers at a mere 0.009213, assuring us of the data's closeness to the predictive regression line — a testament to the model's precision.

Further on, by applying our filter system, we could extract the following results for Microsoft (*Table 2*).

*Table 2*, built from 15 observations, is rich in the complexities and subtleties of potential insider trading. It is not a snapshot, but a dynamic representation that captures the essence of market fluctuations and insider strategies.

The table shows politicians flagged by our system. The number of total trades made with Microsoft, their sells before a decline and their buys before a growth.

The accuracy rate, which is calculated in the following way:

$$\frac{(\text{Sells before decline}) + (\text{Buys before growth})}{\text{Total Amount of Trades}}$$

The final indicators (Business Insider and NY-Times) show whether these politicians have previously been listed in either source as having questionable stock market activity.

According to data from the NY-Times and Business Insider sources, 13 out of 15 (or about 86.67%) members of Congress who have received alerts from our system have previously engaged in questionable trading activity. The New York Times even lists where the congressmen may have held positions with potential conflicts based on their committee and their past in business.

In conclusion, the narrative that unfolds from our model is not one of isolated statistical metrics but a cohesive story of market behavior. It highlights the

Table 2

Anonymised data from the “suspicious trades” Excel sheet in MSFT-Analysis.xlsx

Politicians	Total Trades	Sells before decline	Buys before growth	Accuracy ratio	Business Insider	NY-Times
Politician 1	1	1	0	100%	Yes	Yes
Politician 2	97	22	29	53%	Yes	Yes
Politician 3	3	2	1	100%	No	Yes
Politician 4	6	2	4	100%	No	Yes
Politician 5	15	4	4	53%	Yes	Yes
Politician 6	13	2	5	54%	Yes	Yes
Politician 7	2	2	0	100%	Yes	Yes
Politician 8	9	2	4	67%	Yes	Yes
Politician 9	2	0	2	100%	Yes	No
Politician 10	4	3	0	75%	Yes	Yes
Politician 11	1	1	0	100%	No	Yes
Politician 12	1	1	0	100%	No	No
Politician 13	1	1	0	100%	No	No
Politician 14	1	0	1	100%	No	Yes
Politician 15	1	1	0	100%	Yes	No

Source: Developed by the author.

pivotal role of trade characteristics in guiding insider trading, with market indices playing a surprisingly subdued part in this financial symphony. The insights we derive are far-reaching, shedding light on the enigmatic forces that steer market dynamics and offering a robust foundation for future research and policy formulation in financial regulation. Thus, this subchapter weaves together the statistical findings and economic theories into a narrative that is not just fluent but resonates with the depth and complexity of the financial markets it seeks to explain.

## 5. Discussion

In our study on financial markets, we aimed to enhance transparency and ethical standards. Utilizing advanced methodologies and thorough data analysis (OLS regression model), we sought to uncover and understand the implications of trading practices that potentially conflict with legal and ethical norms. Our research, through rigorous examination and data scrutiny, has revealed a realm where nuanced and potentially problematic trading activities prevail. This endeavor revealed recurring patterns of conduct that, while not outright viola-

tions, danced precariously along the edges of legal frameworks and ethical norms.

The meticulous application of our filters brought to light the repeated STOCK Act infringements by some politicians, casting a spotlight on the systemic flaws where consequences for non-compliance are trivial compared to the potential windfalls from informed trading. These minor penalties do little to deter the misuse of privileged information, thus undermining the spirit of the STOCK Act.

Our scrutiny also extended to the transactions linked to certain well-known families. These trades, significant in size and timing, straddle the fine line of ethical propriety, raising questions about the integrity of lawmakers vested with the power to influence the markets they invest in. While legally above board, these activities spotlight the moral grey areas that exist within the current legislative landscape.

Amid this exploration, we encountered the opaque veil cast by the SEC’s reporting structure, which grants leeway in filing periods. This flexibility, while ostensibly practical, cloaks the actual financial outcomes of trades within a shroud of ranges

and estimates, obscuring the precise gains or losses. The reports, instead of providing clarity, often leave a mirage of transparency that disintegrates upon closer examination.

This ambiguity transcends isolated events, igniting a broader debate over the ethics of allowing those in power to engage in market activities that may be swayed by nonpublic business information. Despite the STOCK Act's directives for transparency, its enforcement is sporadic, and its provisions are insufficient to deter the advantages presented by insider knowledge.

Our analysis — coupled with a remarkable finding that about 86.67% of the trades flagged by our system were executed by politicians listed in the Business Insider article «78 members of Congress caught violating law on stock trades»<sup>5</sup> and in the New York Times (hereinafter referred to as NY-Times) article “These 97 Members of Congress Reported Trades in Companies Influenced by Their Committees”<sup>6</sup> signals a pressing need for reform in the legislative framework governing insider trading. We advocate for a shift toward more rigorous enforcement and a reevaluation of the rules governing the trading activities of those at the helm of power.

Looking forward, we envisage a future where financial disclosures become bastions of transparency with a timeframe smaller than 2 days, or a live update function that gives more insight on the movement of public servants. Per say, it would be much more effective to make the brackets needed for a financial statement in much smaller intervals, because currently there are brackets that have a too vague range (e.g.: from 5 million USD to 25 million USD and from 25 million USD to 50 million USD). Our proposal would be that amounts above 1 million USD should be disclosed in million steps, steering the market towards a paradigm of integrity and fairness. The goal is a future where transparency is not merely pursued but achieved, and trust in the openness of the financial system is unshakeable. This is achievable with the help of machine learning

algorithms that would collect the trades conducted in an encrypted manner and frequently check which politicians are actively influencing trends on the market (for example, by passing new laws).

The penalty for misconduct should not only be a fixed amount of 200 USD, but also a percentage of the earnings gained during the relevant time-frame. Additionally, politicians and their family members should be obligated to publicly disclose all financial papers to uncover any potential illicit activities. The use of machine learning algorithms can help analyse connections between income sources and market events to verify potential malicious intent. The results could be used as evidence to press further charges against the public servant. The process should be made public and analyzed by independent, anonymous, and certified specialists within a short time frame to ensure a valid and uncorrupted output that accurately reflects any discrepancies.

## 6. Conclusions

This study, based on rigorous econometric analysis and a comprehensive review of trading behaviour and data structures, has not only highlighted significant challenges, but also identified potential avenues for meaningful reform.

Our investigation navigated through vast amounts of data to uncover patterns that at first glance seemed to point clearly to systemic problems in market practices, particularly those involving political figures. The initial finding — that approximately 86.67% of certain transactions examined were executed by politicians with a history of STOCK Act violations — suggested a troubling trend. However, upon closer examination and reflection, we recognise the complexity of attributing causality based solely on the profitability of the trades and note that the situation looks suspicious and requires further investigation.

The leap from observing high profitability among a subset of market participants to attributing this success to insider information. This assumption overlooks several plausible explanations, such as sophisticated investment strategies, the advice of competent financial advisors, or even serendipity. The profitability of a politician's portfolio, while suggestive, is not incontrovertible evidence of insider trading. It is a hypothesis that warrants further investigation rather than a conclusion. The complexity of financial markets, where myriad factors influence

<sup>5</sup> Business Insider — 78 members of Congress have violated a law designed to prevent insider trading and stop conflicts-of-interest: <https://www.businessinsider.com/congress-stock-act-violations-senate-house-trading-2021-9?r=US&IR=T> (accessed on 02.03.2023)

<sup>6</sup> New York Times — These 97 Members of Congress Reported Trades in Companies Influenced by Their Committees: <https://www.nytimes.com/interactive/2022/09/13/us/politics/congress-members-stock-trading-list.html> (accessed on 02.03.2023)



trading success, underscores the risk of simplistic interpretations of data.

Acknowledging this, our research ventured into the realm of assumptions with the implicit hypothesis that past violations of the STOCK Act by politicians could predispose them to repeat such behaviors. This assumption, while grounded in behavioral patterns observed in other contexts, introduces a risk of confirmation bias, potentially overshadowing alternative explanations for the observed trading success. The reliance on indirect data to infer insider trading underscores a fundamental limitation of our study — the challenge of directly linking trade profitability to the illicit use of insider information without a comprehensive analysis of individual trade contexts.

In addition, it is important to note that our analysis is limited to transactions within the Microsoft Corp sphere, which serves as a case study. This limited perspective may not encompass all trading behaviours and their impact on the wider market or other sectors, which could potentially bias our analysis and conclusions.

Although our results raise valid concerns about the transparency and ethics of trades carried out by political figures, they do not conclusively demonstrate insider trading. Instead, they highlight patterns that warrant further investigation and scrutiny. The observed high profitability of trades

by certain politicians is concerning and suggestive of potential insider information usage, but it is not conclusive. This realization prompts a call for more nuanced research methodologies that can more directly ascertain the motivations and information sources underpinning trading decisions this may be done in the future, potentially by as official intelligence or machine, learning algorithms, which would give them more detailed than nuanced result.

In conclusion, our exploration of the financial market's complexities highlights the need for further investigation rather than a definitive conclusion. This emphasises the importance of enforcing existing laws such as the STOCK Act, revaluating reporting standards, and committing to transparency and ethical responsibility within financial markets. Our goal is to achieve a future with strong financial disclosures, a trustworthy financial system, and equal opportunities for all market participants. To achieve this, we must not only be vigilant and advocate for change, but also have a nuanced understanding of the data and commit to rigorous, evidence-based analysis. The way ahead involves ongoing exploration, learning, and, crucially, open dialogue and collaboration among researchers, policymakers, and market participants. By working together, we can strive to achieve a more transparent, ethical, and fair marketplace.

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