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“ The major challenge for the world in 2025 is how to rekindle the spirit of solidarity and unity of the international community, especially of great powers, to deal with the enormity of global challenges.

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Shahid Javed Burki
Chairman

The Shahid Javed Burki Institute
of Public Policy at NetSol

Trump and Immigrants to America

When Donald Trump was elected the United States president in 2017, he proclaimed that his ambition was to make America great again. MAGA became a slogan for his followers. He himself wore a red cap with the words MAGA inscribed on it. To make America great again, it had to go alone, not be constrained by outside forces. A group not convened by Trump but made up of people who

shared his outlook came up with a document titled "2025 Presidential Transition Project." Trump proposed that if he were to be elected in November 2024, he would turn himself into a dictator for one day.

By that he meant that on the first day in office, he would issue a spate of executive orders that would retake some of the ground his country had lost by following the old global order. He kept his word. The orders he issued were focused on reducing the size of the federal work force and controlling immigration into the country. By his count, there were at least 11 million illegal immigrants living in the country. They would be rounded up, put on the planes and taken to the countries from which they had come. He put Steven Miller in charge of this operation. He was brought in from California and given a senior position in the White House.

Miller had won notoriety during the first term Donald Trump was in office. He was responsible for the order that barred people from seven Muslim majority countries from entering the United States. This order was challenged in the courts and declared unconstitutional by them. This time, Miller's focus was on rounding up the illegals living in the country and deporting them. By sending them back to the countries from which they had come would hurt both the United States as well as the countries that had exported their workers. The US would be hurt since the illegals perform work in the vital sectors of construction and agriculture. In the house we have lived in for 45 years in a Washington suburb, whenever we have needed work to be done inside or outside, the workers who were engaged were almost always those from Central America.

I don't have the numbers for the illegals who have come in illegally from Pakistan to the United States and may be repatriated but these

estimates are available for India. However, the Pakistani situation may not be that different from that of its neighbor. Indians began moving to the United States in large numbers in the 1960s. The pull is strong today.

According to Pew Research Center, an agency based in Washington, India is one of the top sources of illegal migration to the United States. It estimates that as of 2022, more than 700,000 undocumented Indians are living in the United States. This is the third largest group, behind Mexicans' and Salvadoreans. Some Indians have arrived legally with student visas or time-bound work permits but overstayed. According to U.S. government data, in 2023 about 90,000 Indians were arrested to enter America illegally. Indian authorities fear that the Trump administration program to locate illegals and deport them would likely involve tens of thousands of people. However, as many illegal Indians work in modern sectors of the American economy, such as finance, and information technology, there will be pressure exerted on the White House not to send these vital workers back to India. Elon Musk, an IT and air space entrepreneur, employs many high skilled Indian workers. He is unlikely to extend his program to include many people of Indian origin.



Shahid Najam
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Year 2024: Failure of Multilateralism

The year 2024 witnessed in despair the ravages of two continuing wars i.e., Gaza and Ukraine, episodes of recurrent conflicts and civil unrest across several other parts of the world notably Sudan, Syria, Myanmar, insurgencies of Boko Haram, Niger, Burkina Faso, Mali Azawad conflict etc. The intensity and rising human, social and economic costs of armed conflicts and violence continue to surge unabated. It is estimated that fatalities from these deadly events increased by more than 37% year-on-year during last year touching 200,000 plus globally. The population of Gaza has been the major victim of the atrocities since the onset of the Israeli brutalities. By 19 January 2025, when the ceasefire between Hamas and Israel came into effect, over 46,000 Palestinians already lost their life of which more than half constituted women and children. Large parts of Gaza was rendered uninhabitable, with leveling of cities, displacement of almost entire population of 2.3 million, destruction of healthcare system, educational facilities, heritage landmarks and livelihood assets of the people.

Globally, over 290 million people are in need of assistance in 2024. The financial assistance of \$48.3 billion is required to support the 182.2m people targeted for relief but there has been a sharp reduction in humanitarian funding compounded by accelerated climate crisis and successive external shocks in recent years e.g., the coronavirus pandemic and the impact of the

Russia–Ukraine war on food and energy security.

The War on Gaza has palpably unfolded the gross ineffectiveness of the multilateralism and UN system. It has also eroded the credibility and faith of the world community in values of democracy, efficacy of international law, the rules of morality and norms of justice of the free world. The sanctions etc., as tool for deterrence and enforcing UN mandate has lost its effectiveness. Might, muscles and money blatantly used by Israel with the active support of US, UK and its European allies with the acquiescence of the Arab states seem to have emerged as the major determinants in shaping the global order. The yawning vacuum which thus has been created by denying and diluting the UN as universally acknowledge international instrument to manage and sustain the global governance system will indeed have serious repercussions for the future of humanity.

The major challenge for the world in 2025 is how to rekindle the spirit of solidarity and unity of the international community, especially of great powers, to deal with the enormity of global challenges, through the UN system and embrace true spirit of multilateralism in seeking resolution of various problems or crises, big or small, through concerted regional and global efforts with sovereign states playing equitable role. There is a dire need to reform and resuscitate the global governance framework through institution- and norm-building, a process that needs the participation of all countries. This indeed is a stark reality which the world needs to recognize to save the system from total collapse.



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Brain-Controlled Prosthetics Limbs Closer to Reality

Reconstructing Muscles

The human body's awareness of itself in space called proprioception is a complicated capacity to restore but, is important to movement. Muscles send signals to the brain about where the body is, how it is moving and what forces it is encountering. In a healthy human body these signals are generated by coupled muscles called agonist-antagonist pairs in which one contracts while the other stretches. In a traditional amputation this important feedback is discarded. In recent work a technique has been developed known as "An Agonist-Antagonist Myo-Neural Interface (or, AMI)" which surgically reconstructs these push-pull pairs and uses the signals they generate to control prosthetic joints. This procedure enables a recipient to "feel" their prosthetic limb. When the prosthesis moves, the person actually feels that movement as a natural proprioceptive sensation. In a recent (July 2024) controlled clinical trial this technique was tested in 14 surgeries of below-the- knee amputations. Those with the surgical process of paired muscles the patients achieved normal walking speeds after surgery.

So far, engineers used to consider biology as a fixed limitation to be engineered around. This technique is at the frontier of redefining the relationship between machine and body. This technique called "Anatomic" is edging us

towards fruitful partnerships between engineering, physics and surgical solutions.

Rebuilding Bodies

In a UCLA anatomic lab collaboration¹ are ongoing among surgeons and engineers to mount cadaver limbs to a manipulator arm and evaluate the systems we are developing to ensure that they work as intended. One of the projects under development is a new attachment method that avoids the permanent hole that comes with current integration. Instead of a titanium bolt, there is a piece of steel in the limb and an electromagnet in the socket of the prosthetic. That magnet holds the socket onto the limb and then you can control how much attractive force there is by changing the current through the electromagnet. The magnetic force bears the load, not the socket. This is a situation where physics also joins forces with engineering and medicine.

An added benefit in restoring proprioception is that the prosthesis feels more like a part of the recipient. "The goal is that when we do reconstruction, the person says," Oh my God, you have given me back my body.



Atr un Nisa
Research Associate

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Pakistan's Economic Landscape 2025: Growth Prospects Amid Structural Challenges

Pakistan's economic landscape for 2025 is shaped by a mix of opportunities and challenges, influenced by monetary policy decisions, governance dynamics, and large-scale development projects. The State Bank of Pakistan (SBP) has aggressively reduced interest rates to boost economic activity, cutting the key policy rate to 12% by January 2025 following a steady decline in inflation, which reached a six-year low of 4.1% in December 2024. These rate cuts are expected to encourage investment in key sectors such as real estate, manufacturing, and small businesses. However, economic experts stress that monetary policy alone cannot drive sustainable growth; broader reforms, fiscal discipline, and foreign investments are essential for long-term stability. Meanwhile, the increasing role of the military in economic affairs, particularly through the Special Investment Facilitation Council (SIFC), has drawn both praise and criticism. While military-led initiatives have reportedly improved efficiency and attracted investment, concerns over reduced civilian oversight and governance transparency remain a key issue.

Pakistan's economic growth is also tied to major infrastructure and resource projects like Gwadar and Reko Diq copper and mining project. The Gwadar port, a critical component of the China-Pakistan Economic Corridor (CPEC), has

faced setbacks due to security challenges, local unrest, and governance inefficiencies, limiting its potential as a regional trade hub. Addressing these concerns is vital for ensuring equitable economic benefits. On the other hand, the revival of the Reko Diq copper and gold mining project presents a significant opportunity, with projected revenues of \$74 billion over the next 37 years. If successfully executed, this project could enhance Pakistan's foreign exchange reserves and attract additional investment. Despite these positive developments, economic challenges persist, particularly rising poverty levels. According to the World Bank, poverty increased from 21.9% in 2018-19 to 25.3% in 2022-23, driven by inflation, climate disasters, and pandemic-related disruptions. While projections suggest poverty may decline to 18.7% by 2025, achieving this target requires structural reforms in education, healthcare, and employment generation. To navigate these complexities, Pakistan must implement comprehensive economic policies that foster investor confidence, strengthen governance, and promote inclusive growth.



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The World Needs "Womenomics"

Human beings have transcended their forerunners, be it the mission on Mars following the 1969 watershed Moon landing or the odyssey from analog computers to artificial intelligence; the world we know is characterized by earth-shattering developments that profoundly redefine our lives. However, these

feats of sheer human genius come with an asterisk due to how we as a race have failed the one half of our population, who essentially carry one half of our potential. It is estimated that the world needs another 286 years or three centuries to eliminate all discriminatory laws against women. Conversely at the core this discussion of gender equality is a term called *womenomics* which was coined by a Goldman Sachs strategist, Kathy Matsui. Womenomics promulgates the idea that economic growth and women's advancement are directly proportional, hence connected. The term was officially launched by former Japanese Premier Shinzo Abe in 2013 to promote economic growth and gender equality in tandem.

The exponents of womenomics believe that more women need to participate in the workforce and occupy leadership positions. Similarly, women need to be encouraged to become innovators, trailblazers, entrepreneurs and industry leaders. It is noteworthy, that womenomics can generate a much more diverse economy, promote gender equality and create economic dividend for the society as a whole. It is estimated that espousing womenomics as a policy, Japan witnessed its female labor participation ratio surged to a record 71% and helped improve the GDP of the country. Womenomics isn't merely a sound social or gender sensitive move, its inherently good for business as USD 12 trillion can be contributed to the global GDP by encompassing gender equality and women's advancement in the policymaking edifice along with eradicating barriers that preclude the achieving of Sustainable Development Goal 5 "Gender Equality".

Pakistan has a 20% or 13.5 million female labor participation compared to the global average of virtually 40%. Women inadequately receive the fruit of their labor, a huge portion especially the

7 million associated with agriculture don't get paid nor do they receive recognition. Working women in Pakistan grapple with the polycephaly of gender stereotyping and harassment, hence the government needs to become gender sensitive or in other words implement gender sensitive or in other words implement womenomics as it captures the *je ne sais quoi* of good governance.



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Revolutionizing Cancer Treatment: The Role of Circadian Rhythms in Immunotherapy

Cancer is a devastating disease that causes cells to grow uncontrollably. Around the world, medical practitioners use various treatments to combat its effects, with immunotherapy standing out as a revolutionary approach in cancer care. One particularly effective strategy within immunotherapy is immune checkpoint inhibitors (ICIs). These specialized antibodies act as brakes, blocking interactions between certain proteins and their ligands, thereby unleashing the immune system to target cancer.

ICIs target immune checkpoint proteins, which normally help the immune system avoid attacking healthy tissues. However, cancer cells exploit these checkpoints to evade immune detection. In a healthy immune response, the body identifies and destroys abnormal cells, but tumors often produce high ligands that suppress this response. Some even manipulate

nearby normal tissues to express these ligands, further evading immune surveillance.

T cells, a crucial part of the immune system, play a significant role in fighting cancer. These white blood cells act like soldiers, identifying and destroying infected or abnormal cells. Different types of T cells have specific roles: helper T cells signal other immune cells to respond, cytotoxic T cells directly kill cancerous cells, and regulatory T cells prevent the immune system from mistakenly attacking healthy tissue. Together, they form a critical line of defense against diseases, including cancer.

Another fascinating area of cancer treatment research is chronotherapy. Living organisms, including humans, follow a natural 24-hour cycle known as the circadian rhythm, which affects behavior and biological processes. This cycle is governed by the circadian clock, a molecular mechanism that regulates many bodily functions by controlling gene activity. The circadian rhythm has three fundamental characteristics that make it essential to biological processes. First, it is internally driven and follows a consistent 24-hour cycle, even under constant conditions with no external cues, demonstrating its endogenous nature. Second, it is highly adaptable and remains synchronized with external environmental signals, such as light and darkness, ensuring that biological functions align with the outside world. Lastly, its periodicity is independent of body temperature, meaning the rhythm remains stable and unaffected by fluctuations in temperature, which is vital for maintaining regular physiological activities across different conditions.

The circadian clock in vertebrates is like a network of clocks working together, with the main clock in the brain and smaller clocks in other organs. The main clock called the central clock, is located in a part of the brain known as

the suprachiasmatic nucleus (SCN). The other clocks, known as peripheral clocks, are found in organs like muscles, fat, liver, and pancreas. Light is the key external signal that controls the central clock. Light enters the body through cells in the eyes that can sense light, sending signals to the SCN, which helps synchronize the body's internal rhythm.

Each cell in the body also has its internal clock, which is guided by about 15 specific genes. The SCN helps coordinate these smaller clocks by sending signals through nerves, hormones, and even body temperature. These signals ensure that the body's rhythms stay in sync.

The molecular clock in each cell works through a set of feedback loops. In the main loop, two proteins, BMAL1 and CLOCK, work together to activate other genes. These genes produce two additional proteins, PER and CRY, which build up throughout the day. When their levels get high enough, they stop the production of BMAL1 and CLOCK by attaching to them. At night, the body breaks down these proteins. Another part of the loop involves two other proteins, ROR and REV-ERB, which compete to control the expression of BMAL1 by either promoting or blocking it. This intricate system helps the body maintain a stable rhythm throughout the day and night.

With age, the circadian system can become less stable, potentially leading to health problems and an increased risk of cancer.

Chronotherapy aligns treatments like chemotherapy and immunotherapy with a patient's circadian rhythm to maximize effectiveness and reduce side effects. Research suggests that timing treatments to match the body's natural cycles can enhance therapeutic outcomes and lower drug toxicity. Additionally, chronoradiotherapy has been shown to reduce the side effects of radiation

therapy. While this innovative approach shows great promise, challenges such as individual differences in age, gender, and circadian patterns need to be addressed before it can be widely adopted in clinical practice.

By analyzing patient cohorts treated with ICIs, such research seeks to identify the optimal timing for drug delivery, considering factors such as survival rates, tumor response, and toxicity, while also accounting for patient-specific characteristics such as age, sex, and overall health.

This heterogeneous patient data, drawn from real-world clinical settings with various cancer types, treatment protocols, and patient demographics, presents several challenges in data preparation. A rigorous data cleaning and wrangling process is necessary to address issues such as missing data, which is common in clinical datasets. Multiple imputation techniques are used to handle missing information, ensuring no valuable data is discarded. Data inconsistencies and outliers are carefully identified and corrected, improving the reliability of subsequent analyses. Additionally, data standardization ensures comparability across patient groups, reducing biases arising from differences in data collection methods across clinical sites.

After data cleaning and standardization, advanced statistical techniques are employed to explore the relationship between ICI timing and patient outcomes. Mixed effects models are especially suitable for this type of analysis, as they can handle both repeated measurements of biomarkers (longitudinal data) and survival outcomes (time-to-event data). These models are ideal for heterogeneous datasets, accounting for the variability across individual patients. By incorporating fixed effects, such as the timing of ICI administration and patient demographics,

alongside random effects that capture patient-specific variability, these models offer a detailed understanding of how circadian rhythms and personalized treatment timing influence the efficacy and side effects of ICIs on different patients.

A critical statistical framework used in this research is Hierarchical Bayesian Joint Models (HBJM), which address the relationship between longitudinal data (biomarker measurements) and survival data (e.g., cancer progression or tumor status). The Bayesian approach is advantageous in this context because it incorporates prior knowledge, such as the influence of circadian rhythms on immune function, to enhance the precision of inferences. The hierarchical structure of such models allows the analysis of complex dependencies within data, such as between patient-level effects and treatment timing, improving the robustness and flexibility of the results. By sharing random effects between longitudinal and survival sub-models, HBJMs capture the intricate interplay between immune responses and treatment outcomes, crucial for understanding the effects of ICI timing on cancer therapy.

The research uses both synthetic and real-world clinical data. Synthetic datasets test and refine statistical models in controlled environments, while real-world data, reflecting actual clinical conditions, offer more authentic insights. Applying the models to both types of data ensures the findings are both statistically robust and clinically applicable.

As the project progresses, the focus shifts to designing prospective clinical trials to validate the effectiveness of circadian-based personalized ICI administration. Such trials assign patients to different treatment timing schedules based on insights gained from the statistical models. The design of these trials

considers factors like randomization, sample sizes, and statistical power to detect significant treatment effects. Ultimately, the goal is to provide evidence supporting the integration of circadian-based timing into real-world oncology practice.

Additionally, the research team has collaborated with applied mathematicians to investigate the molecular mechanisms underlying the effects of ICI timing on immune responses and tumor progression. Using mechanistic models based on ordinary differential equations (ODEs), they aim to uncover the biological processes that explain why circadian timing might influence treatment outcomes. These models offer deeper insights into the timing dependencies observed in clinical data, providing a more detailed understanding of immune checkpoint interactions with the body's circadian rhythm.

A meta-analysis is also conducted to synthesize findings from clinical trials, cohort studies, and synthetic data analyses. By combining results from multiple studies, meta-analysis helps validate the findings, ensuring consistency across different patient populations and clinical settings. This process refines statistical models and provides evidence to support the integration of circadian-based ICI timing into clinical practice.

The project also emphasizes on personalized treatment by tailoring ICI administration to individual patient characteristics, aligning treatment schedules with circadian rhythms. Personalized treatment optimizes immune response and minimizes side effects, offering an approach tailored to each patient's unique biology. This strategy includes dynamic prediction, allowing real-time updates on patient outcomes as new data becomes

available. By continuously adjusting treatment plans based on real-time information, clinicians can optimize therapy for each patient, improving survival rates and quality of life.

Dynamic prediction is implemented using advanced statistical methods like mixed effects models and HBJMs. These models enable the prediction of individual patient trajectories and survival probabilities over time, considering factors such as biomarkers, tumor characteristics, and treatment timing. As new data is integrated, predictions are updated, allowing for adaptive treatment strategies that respond to changing patient conditions. This approach enhances the personalized treatment process, ensuring that each patient receives the most effective therapy at the most appropriate time.

The ultimate goal of such research is to develop a precise and individualized treatment strategy for cancer patients undergoing ICI therapy. By aligning treatment timing with circadian rhythms and utilizing dynamic prediction methods, the project aims to improve both the efficacy and safety of cancer immunotherapy. Through these advanced statistical methods and personalized treatment approaches, the project has the potential to revolutionize cancer therapy, offering a more tailored and effective solution for cancer patients worldwide.



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BIPP Round Up

On 5th of December, 2024, The Shahid Javed Burki Institute of Public Policy (BIPP) at Netsol, proudly continued its mission of empowering deserving female students by awarding 10 scholarships to the students of Punjab University College of Pharmacy (PUCP) in the discipline of Pharm D.



Moreover on the 10th of December 2024, BIPP awarded academic scholarships to deserving students of Lahore School of Nursing, University Of Lahore (UOL). Dr. Ejaz Sandhu (Director Operations, BIPP) alongside Mr. Awais Raof (Chairman BoG, UOL) and Mr. Sarfraz Masih (Principal, Lahore School of Nursing) presented certificates to the scholarship recipients.



While on the 11th of December 2024, BIPP awarded 10 academic scholarships to the students of The Sahara College Narowal, organized by Sahara for Life Trust - SFLT. The ceremony was graced by Dr. Ejaz Sandhu, alongside Mr. Abrar Ul Haq, Chairman of Sahara Trust, Mr. Israr-Ul-Haq, Executive Director of Sahara Trust, and Mr. Ayub Ghauri (CEO HospitAll) who jointly presented certificates to the deserving recipients.



Apart from this, on the 11th of December, 2024, Beaconhouse National University, (BNU) hosted an enlightening session on "Agripreneurship: Trends, Opportunities & Goals for Sustainable Growth", organized by the Faculty of Management Sciences, BNU. The session featured Dr. Iftikhar Hussain Shah, Consultant Agri-Pharma at BIPP, as the key speaker. Dr. Shah offered valuable insights into the Agripreneurship course set to be launched at BNU, highlighting its relevance and potential impact. Esteemed speakers included Mr. Ahsan Sarwar (Consultant Agro-Entrepreneur, BIPP), Dr. Hafiz Rehan Nadeem (President, National Alliance for Safe Food), Mr. Ameer Mohsin Ali, and Mr. Zafar Ahmad.



On 26th of December 2024, University of Engineering and Technology, Lahore (UET), hosted the launch ceremony of BIPP's 17th Annual Report, titled "***The State of the Economy: "Beyond the Horizons: The Frontier of Emerging Technologies."***" Prof. Dr. Shahid Munir, the Vice Chancellor (VC), UET presided over the ceremony which was attended by eminent scholars, technology experts, members of the academia, scholars and researchers, representatives of government and prominent citizens. Mr. Rana Sikandar Hayat, Minister of Higher Education Punjab graced the occasion as a Chief Guest. Dr. Muhammad Nizamuddin (Pro-Rector Superior University) participated as commentators and provided invaluable feedback on the Report. Following the welcome address by Prof. Dr. Shahid Munir, and the opening remarks by Mr. Shahid Najam, Vice Chairman BIPP, an overview of the main theme of the report was presented by Mr. Shahid Javed Burki, the Chairman of BIPP.

Dr. Farrukh Iqbal, the former Executive Director of the Institute of Business Administration (IBA), Karachi gave an objective assessment of the economy. Mr. Firas Shams Research Fellow, BIPP thereafter presented the gist of the key findings and recommendations of the report. This was followed by an active Q & A session. Mr. Rana Sikandar Hayat in his address underscored the need for technological advancement in Pakistan. The launch ceremony came to a close with remarks of gratitude by Dr. Ejaz Sandhu. The launch ceremony of BIPP's 17th Annual Report 2024 received coverage in both digital and print media including Geo, Samaa and The News.



BIPP recently marked a significant milestone, celebrating the achievement with enthusiasm and gratitude.



On 23rd of January, 2025, Mr. Shahzad Shaukat, a renowned financial economist, delivered an insightful session on "Financial Economics" as part of BIPP's staff development plan. His

presentation covered key performance indicators, economic reforms, and the importance of sustainable development. Mr. Shaukat discussed GDP growth, inflation trends, and import-export dynamics, highlighting the need for structural reforms to achieve economic stability.



Moreover, BIPP is honored to host its esteemed Chairman Mr. Shahid Javed Burki, during his ongoing visit to Pakistan. The team warmly welcomed him and commenced discussions on key areas of the institute's work and vision. As part of the engagement, the team presented an initial progress report on BIPP's activities, including highlights from the 2024 Annual Report. The discussions also covered updates on the institute's new initiatives, financial standing, and strategic direction for the future.



On 24th of January Mr. Burki member of 1960 batch, addressed the syndicate probationers

of 52nd Common Training Programme (CTP) about China Pakistan Economic Corridor (CPEC), positive aspect of Pakistan and his conversation about the project with the Chinese PM Zhu Rongji in 1993. The session emphasized Pakistan's strategic advantages and inspired probationers to contribute effectively to the country's development.



Additionally, Mr. Burki joined as a distinguished speaker at the Annual Working Paper Series Workshop hosted by Lahore University of Management Sciences (LUMS). The workshop centered around the overarching theme: "Observing the CPEC Trajectory: Legal, Socio-economic, and Environmental Impacts on Governance and Sustainable Development"



Whereas, on 30th of January, BIPP awarded 25 scholarships to deserving students of Lahore College for Women University (LCWU) in the fields of Pharm D, Computer Science, Software Engineering, Electrical Engineering, and Economics under the BIPP Scholarship Program. The ceremony commenced with

welcome remarks by Mr. Abdul Ghaffar (Director of Financial Aid at LCWU) followed by addresses from Mr. Shahid Javed Burki, Mr. Shahid Najam, and Dr. Ejaz Sandhu. The panel presented certificates and scholarship cheques to the recipients. The event concluded with a vote of thanks from Prof. Dr. Uzma Quraishi (Vice Chancellor, LCWU).



Lastly, on 31st of January, 2025, Mr. Shahid Javed Burk presided over the 13th meeting of Board of Directors (BOD) along with board members Mr. Shahid Najam, Ms. Jahanara Burki, Mr. Babar Yaqoob, Dr. Mohammad Nizamuddin and Mr. Shahjahan Shafi Burki. The meeting discussed Agenda items including the Progress Report on BIPP activities, Scholarship Programs, Briefing on 2024 Annual Report, New Initiatives, Financial position of BIPP, and Way Forward.



Zahra Khan
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Deepfake Finance: Can AI Create Fake Stock Markets?

The rise of AI has introduced a new layer of complexity in financial markets, particularly through the concept of deepfake technology. Originally associated with hyper-realistic but false media—audio, video, and imagery—deepfakes now pose a significant threat to the financial world. This technology can manipulate stock prices, create fake identities for unauthorized access, and fabricate executive voices to authorize fraudulent transactions. The potential for deepfake-driven financial panic is a growing concern for regulators and financial institutions alike.

Financial institutions now face the dual challenge of detecting realistic fake media and defending against large-scale deception attempts. AI-powered trading systems can simulate including false demand or supply, misleading investors and affecting market stability. High-frequency trading (HFT) firms sometimes use tactics like quote stuffing—flooding the market with orders only to cancel them quickly, creating confusion—and spoofing, where they place fake buy or sell orders to trick others into reacting. Additionally, AI-powered bots can spread misleading financial news, fake videos, and deceptive social media posts, influencing market trends in ways that may not reflect reality.

HFT uses advanced algorithms to spot and react to market trends in the blink of an eye. These traders make hundreds of trades in seconds, profiting from tiny price fluctuating while adding liquidity and competition to the market. Critics argue that HFT creates **ghost liquidity**, where trades happen quickly for regular investors to act, benefiting only high-speed traders. Moreover, AI-driven trading has been blamed for wild market swings, as the **2010 Flash Crash**, where automated algorithms caused the Dow Jones plunging nearly 1,000 points in minutes. In response, regulators introduced circuit breakers to pause trading during drop, but concerns about AI-driven financial instability remain.

Stock market manipulation involves illegal practices to artificially influence stock prices, but definitions vary across jurisdictions. In the U.S., deceptive transactions are prohibited, while Australia, the EU, and Malaysia have their own specific regulations against actions that distort stock prices or create false values. Scholars also disagree—some believe only fictitious trading should be restricted, while others argue any intentional manipulation undermines market efficiency.

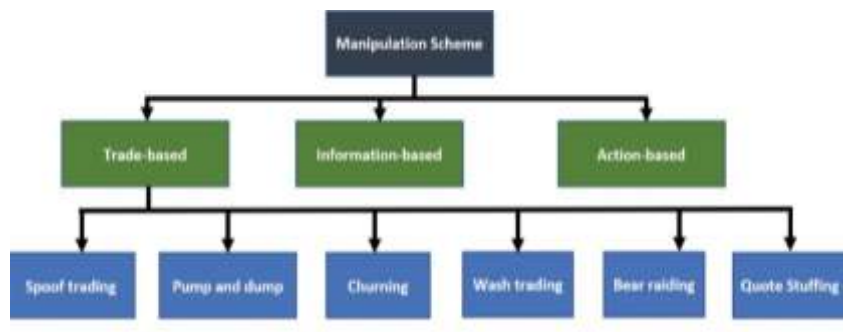
Manipulation is typically categorized into three types: action-based (deliberate actions affecting stock prices), information-based (spreading false information), and trade-based (fictitious trading to alter prices). These categories help clarify the different impacts on financial markets.

Trade-based manipulation, inflates or deflates stock prices through fictitious trading. *"Pump & Dump"* scheme, manipulators buy stocks to boost prices, then sell at inflated rates for profit, and *"dump-and-pump"* where prices are pushed down through mass selling. Emerging markets in Asia like India, Indonesia, and Pakistan, are vulnerable due to weaker regulations, with benefiting brokers while harming investors, market confidence and hindering growth.

Information-based manipulation involves misleading information to sway prices, including fake takeover bids. The success of the strategy depends on the credibility, manipulators mix truth with falsehoods or spread rumours, which can distort prices over time.

Action-based manipulation deliberate actions at influencing stock prices, such as a company director closing a branch to drive down stock value, if the actions create a false market impression, it overlaps with information-based manipulation.

AI and deepfake technology enable scammers to create fake trading platforms that mimic legitimate exchanges. Using deepfake videos, forged reviews, and AI chatbots, they lure investors into depositing funds before disappearing. To counter this, regulators and cybersecurity experts are working to improve verification processes and educate investors on identifying AI-driven



financial fraud.

To mitigate AI-driven risks, financial institutions should adopt multi-layered security measures such as multi-factor authentication, encryption, and anomaly detection. Digital finance is evolving with tokenized stocks, which are digital versions of traditional shares on blockchain, make investing more accessible by allowing fractional ownership and reducing costs. AI-driven synthetic assets, algorithmic trading, and automated hedge funds boost efficiency but also raise risks of market manipulation, requiring stronger regulations.

AI is redefining the financial landscape, offering both new opportunities and serious risks. While it enhances trading efficiency and security, also opens the door to market manipulation and fraud which requires stronger regulations and vigilance. Financial institutions, regulators, and investors must work together to prevent AI-driven financial fraud while leveraging its power to create positive financial innovation.



Mission Statement

BIPP's mission is to improve the welfare of the citizenry with particular emphasis on identifying policy measures that will lead to inclusive, people-centered growth with equity, political stability and sustainable development besides fully harnessing the potential for regional and global integration of the country. BIPP primary areas of interest encompass social, economic, environmental and political development and security, trade and foreign policy-related issues.

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