Central Bank of Sri Lanka

News Survey

Volume 43 Number 4 October - December 2023

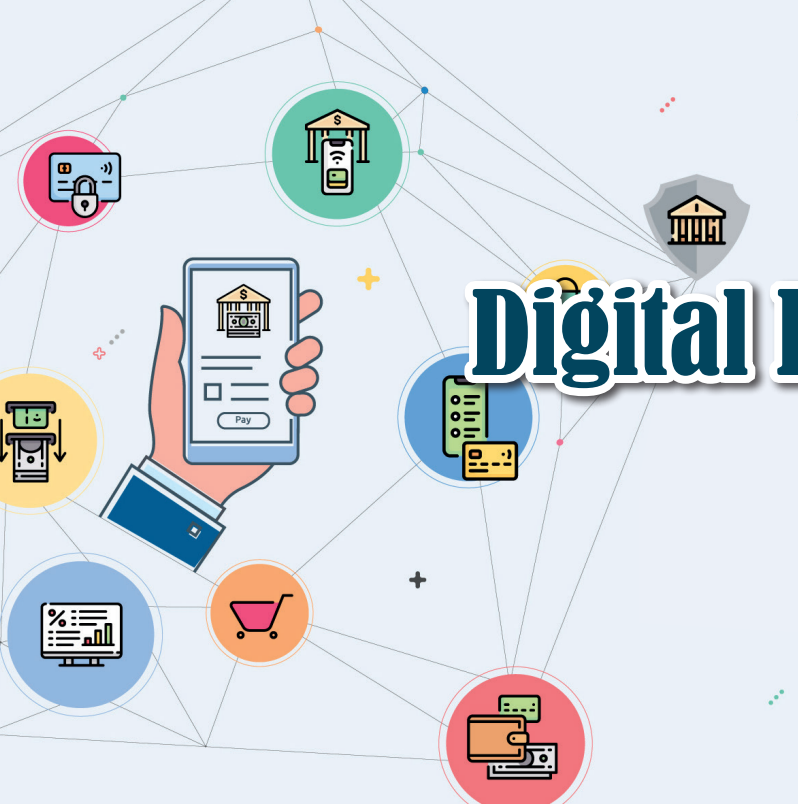
IN THIS ISSUE

ISSN-1391-3589

9 770202 310122

ISSN 1391 3589

Price per copy: Rs. 60.00
Annual subscription (Inclusive of postage): Rs. 420.00



Digital Financial Services Interoperability

S Prabagar,
Senior Accountant,
Finance Department

1. Introduction

Payment interoperability is defined by the World Bank as a "situation in which payment instruments belonging to a given scheme may be used in platforms developed by other schemes, including in different countries", requiring technical compatibility between systems that is supported by commercial agreements between the schemes concerned". Interoperability should not be confused with interconnection, which is the ability to technically connect with another network. Interoperability involves the seamless exchange of information and transactions among diverse financial systems, ensuring they can function together cohesively, whereas interconnectivity underscores the establishment of communication links between these systems, emphasizing the accessibility and interaction without necessarily implying seamless operational integration. Interoperability is considered important because of its potential effects on consumers, businesses and the economy. In mature markets where scale has been achieved, interoperability can help businesses to manage costs, to increase transaction volumes and to enhance efficiencies through shared infrastructure and to increase transaction volumes. Interoperability is one of the major tools that drives account activity, thereby encouraging access to and usage of a wider range of financial services to the underbanked population. This policy model on digital interoperability, aims to enhance in-country policy implementation that will expand interoperability amongst digital financial service providers and other financial service providers to enhance efficiencies, increase customer convenience and boost scale for both domestic and cross-border payments.

2. Interoperability Developing Process

Developing interoperability is a complex process that requires three elements to be in place: (i) a clear and fair governance model to balance cooperation with competition among participants, (ii) an economic model that incentivizes all stakeholders, and (iii) an operational model that safely and reliably connects participants.

(i) Governance model

To achieve interoperability, competing interests need to be brought together. Competing financial services providers

(FSP) will need to clarify and agree on how they will work together, how decisions will be made, and how risks and responsibilities will be shared.

(ii) Economic model

Interoperability influences the economics of all stakeholders. Customers might have to pay additional fees, but they should save on costs that they would have incurred had they used work-around alternatives, such as the cost of maintaining several accounts and performing over-the-counter transactions. FSPs will incur new expenses from creating connections and processing transactions, but they also should see expanded earning potential. The scheme manager and switch operator will seek to cover their expenses; and if they are for-profit entities, they will want to earn a return. Business arrangements should clarify how cost and revenue sharing will incentivize all these actors to promote, process, and/or use interoperable transactions.

(iii) Operational model

Interoperability requires reliable operational models to safely and efficiently transmit information about transactions between participants. This includes the technology solutions needed to support the clearing and settlement functions, as well as several other services that are needed to run the scheme, ranging from securing office space and administrative support to addressing marketing and branding, and legal and compliance issues.

3. Key Steps for Developing Interoperability

As instant payment systems evolved over time, three key steps taken by successful systems have emerged. These steps encourage a collaborative approach among those with a stake in the success of interoperability. Such stakeholder buy-in and consensus are required to establish effective governance, economic, and operational models. These steps may be driven by a variety of market actors from the public or private sectors.

STEP 1. Plan

This first step aims to get stakeholders to agree on the problem they are trying to solve or on the opportunity they are trying to seize with interoperability. The initial phase seeks consensus among stakeholders regarding the specific problem they aim to address or the opportunity they aim to capitalize on through interoperability. During this stage, it is crucial to inquire about the targeted use case, the rationale behind prioritizing interoperability, and the timing considerations. Interoperable payment systems have been developed for various reasons, including enhancing competition, modernizing markets, fostering innovation, and promoting financial inclusion. However, a common underlying objective in most cases is to enhance customer value. One indicator that interoperability may enhance customer outcomes is evident when market research reveals users maintaining multiple accounts or resorting to over-the-counter transactions at agents as workarounds to facilitate transactions across different Financial Service Providers (FSPs).

Once improved interoperability is deemed to be a relevant and timely answer to the problem, stakeholders should agree on a shared vision, roadmap, and process to ensure they are focusing on the same thing and to get buy in from relevant public and private actors. Market research may be needed to gain a better understanding of market dynamics (e.g., scale, distribution, competition, product diversification, outreach), existing regulations and business arrangements, and how interoperability could affect them.

Despite the benefits interoperability brings, not all market participants will necessarily embrace

an interoperability initiative. Dominant players may favor the short-term objective of retaining their market share over the medium- to long term benefits of growing the overall market. At this point, the aim is to clarify how all stakeholders will be incentivized to take part in the process and actively participate in the eventual solution.

Resources to complete the process should also be identified at this stage. They may include identifying a champion to galvanize stakeholders, a facilitator to broker discussions, and technical expertise (legal/regulatory, business model, settlement, etc.) to assess the situation and propose solutions. The champion often is a market stakeholder, such as the scheme manager, an industry association, or the payment systems regulator. The facilitator could be a market stakeholder, including the champion, or an independent organization, but the facilitator should be a neutral and trusted party capable of helping competitors define how they will work together for the benefit of all.

STEP 2. Design

In the design phase, the interoperability arrangement is defined, and the connecting technology is selected. The legal entity that will manage the scheme, and possibly operate the switch, will be identified or newly established. This entity will be a vehicle for ongoing changes to governance and the ultimate decision maker on questions related to the scheme, within the guardrails set by legal and regulatory oversight.

Key questions surrounding the scheme governance, business arrangements, and operational model are answered during this phase. Starting with setting basic principles (e.g., is this model for profit-making or cost-recovery?), this phase aims to clarify the governance model (e.g., ownership, decision-making rules, and membership criteria), the economic model (e.g., expected costs and sources of revenue, process to set fees for customers), and the operational model (e.g., branding, clearing, and settlement). The starting point for design depends on the type of market and project.

STEP 3. Go-to-market

In this phase, the agreed design is implemented, and the service is made available to customers and improved over time. The complexity and the time needed to implement the system will vary from system to sytem. Typically, when a new technology is being implemented, it may take more than a year to offer interoperable payments to customers.

Providers finalize their value proposition and seek to maximize the experience of their customers: design a clear and simple process for customers to learn about, access, and use the interoperable service. A complex process may deter customers who have low levels of digital literacy.

The launch date may be based on when all participants are technically and operationally ready or the launch may be staggered according to the readiness of different participants. Once the launch date is estimated, stakeholders will design their go-to-market plan and marketing campaigns as needed.

After the launch, the scheme owner and participants should track performance closely and make improvements as needed. Are interoperable transactions taking off? Are customers satisfied? When scale is not being achieved in earlier steps in the process, such as the scheme governance or business arrangements, they may need to be revisited. Where services are running smoothly, most successful interoperable payment systems will continue to drive innovation. Expanding the existing services is necessary to remain relevant in a fast-moving payment landscape. Such expansion may mean opening up to new types of participants or different transaction types (e.g., cross-border transactions) or connecting to other local, regional or global systems.

4. Regulatory aspect of interoperability

The payment systems are the bedrock of the financial system. Since they have a direct impact on people's daily lives and livelihoods, it is important that they work smoothly for the sake of maintaining financial stability. To reach the objectives set out for payment interoperability, it is crucial to achieve regulatory interoperability. At a domestic level, achieving regulatory interoperability means that existing or new regulations will facilitate each player to connect to all others to provide a seamless and affordable service to end-users in an ecosystem with a wide range of players. While bilateral or multilateral collaborations among private parties can help improve interoperability by creating a network among themselves, laws and regulations can also play an important role.

Despite its importance, regulatory interoperability has historically been the slowest and most challenging stage to advance for a variety of reasons: first, domestic legislative processes are often complex and lengthy; second, differences across political systems, culture and stages of economic development often lead to differences in policy objectives and regulations across countries; and third, there is a lack of qualitative and quantitative measurement covering regulatory interoperability, making it hard to understand the existing gaps and to measure progress in filling them.

5. Conclusion

In conclusion, achieving digital financial services interoperability is crucial for enhancing access, efficiency, and innovation in the financial sector. Payment interoperability, defined as the ability for payment instruments from one scheme to be used in platforms developed by other schemes, requires a careful balance of governance, economic incentives, and operational models. The process involves planning, designing, and implementing interoperable systems in collaboration with various stakeholders, both public and private.

Planning is essential, involving a clear understanding of the issues to be addressed and gaining stakeholder consensus. The design phase defines the governance, economic, and operational aspects of the interoperability arrangement. Finally, the go-to-market phase involves implementation and continuous improvement based on customer feedback and market demands. Regulatory interoperability is equally crucial, necessitating harmonization of regulations to create a seamless and affordable service ecosystem for end-users.

Interoperability not only benefits consumers by providing them with a wider range of financial services but also enables businesses to manage costs, increase efficiency, and expand transaction volumes. By fostering collaboration and aligning interests among stakeholders, digital financial services interoperability can play a significant role in driving financial inclusion and economic growth. However, it requires ongoing efforts, regulatory support, and a commitment to addressing challenges to fully realize its potential in shaping the future of the financial landscape.

References

1. Course material of CBE-AFI Joint Learning Programme on Digital Financial Services Interoperability, November 25-28, 2019, Egypt.
2. Cook, William, Dylan Lennox, and Souraya Sbeih. 2020. "Building Faster Better: Instant Payment Systems and Interoperability in Digital Financial Services." Technical Guide. Washington, D.C.: CGAP. https://www.cgap.org/research/publication/building-faster-better-guide-inclusive-instant-payment-systems
3. CGAP. 2015. "A Market Systems Approach to Financial Inclusion: Guidelines for Funders." Consensus Guidelines. Washington, D.C.
4. https://www.cgap.org/sites/default/files/researches/documents/Consensus-Guidelines-A-Market-SystemsApproach-to-Financial-Inclusion-Sept-2015_0.pdf

Risk-Based Supervisory Framework in the Global Landscape

D G S M Ariyarathne
Senior Assistant Director
Finance Department

1. Overview

During the post-crisis, there has been a shift towards "Risk-based Supervision" (RBS) away from the "CAMELS approach" (C – Capital; A – Assets Quality; M – Management; E – Earnings; L – Liquidity; S – Sensitivity), which uses a "backward-looking methodology and transaction testing model." RBS is a forward-looking approach as it seeks to assess the risk build-up more dynamically. It focuses on the dual objectives of examining whether the supervised entity follows the regulatory prescriptions and whether its internal risk management practices are in line with regulatory expectations (Chakrabarty 2013, p. 4).

The RBS Framework provides an effective approach to assess the safety and soundness of Licensed Financial Institutions (LFIs) against current and emerging risks. Supervisory authorities need to have a sound basis for conducting the assessment of the risk profile of LFIs involving identification and evaluations of risk and the management of those risks. They need to develop guidelines on the procedures and criteria against which authorized institutions' risk, risk management processes, and the adequacy of capital, liquidity, recoverability, and resolvability are to assess and implement a proper mechanism to ensure consistency in such assessments.

The best regulation might become inadequate if there is no efficient supervision. On the other hand, it involves dynamic assessments of the risk and risk governance in the operations of LFIs to ensure they comply with laws and regulations. Therefore, the administration is specific to LFI, with the intensity being proportional to the size, nature, complexity, and risk profile of LFIs (Risk–Based Supervision Framework for Licensed Financial Institutions in the Eastern Caribbean Currency Union 2017, p. 1). In the aftermath of the global financial crisis, supervisors are now much more aware of the importance of a strong risk-based supervisory framework for comprehending, evaluating, and monitoring the risk in the operations of LFIs.

2. Key Characteristics of the Modern RBS Framework

RBS is fundamentally different from compliance-based systems, which emphasize how closely businesses abide by rules, specifications, and directions and can involve a strict schedule of on-site inspections and sanctions for non-compliance. RBS, by contrast, is outcomes and principles based. The most significant conduct and prudential risks that firms pose to regulatory objectives are evaluated, together with how well; firms can control and manage them from a forward-looking viewpoint (Risk-Based Supervision 2018, p. 2).

RBS has several defining characteristics that distinguish it from other approaches.

(i) **Consolidated Supervision:** The RBS Framework covers both a sole and group basis such as subsidiaries, branches, and joint ventures, within and outside of the country. In other words, the supervision of the LFIs will be on a consolidated basis. Consolidated supervision evaluates the strength of an entire group, considering all the risks that may affect the LFIs. This group-wide approach to supervision is where all the risks of a banking group go beyond accounting consolidation.

(ii) **Continuous Assessment of the Risk Profile:** According to the RBS Framework, the risk profile of LFIs requires to evaluate continuously. The continuous supervision requires establishing an ongoing relationship and contact with the LFIs (Risk–Based Supervision Framework for Licensed Financial Institutions in the Eastern Caribbean Currency Union 2017, p. 1). It is an international practice to adopt a portfolio approach to supervision by assigning a dedicated team of Examiners (both on-site and off-site) to the LFIs to empower continuous and consistent supervision. The examiner in charge of the On-site examination and the Central Point of Contact from the Off-site Surveillance team will be the focal point of contact with the LFIs. Assigning the same team to an LFI will be important for the standardization of risk assessment and for developing a mutual understanding for preparing the LFI's risk profile.

(iii) **Principles-Based and Forward-Looking Supervision:** The RBS Framework is principles-based and forward-looking and will permit a timely and flexible response to the risks in the financial sector, as well as early identification of problems and timely intervention. Principles-based supervision applies sound judgment in identifying and evaluating risks and distinguishes the complexity and diversity among the LFIs, avoiding a "one size fits all" approach.

(iv) **Supervisory Intensity and Intervention:** There is a direct link between the LFI's overall risk profile assessment, the level of supervision, and the degree of intervention. They will reflect the LFI's potential impact on the financial system stability in the country. The frequency of administration and the degree of intervention will depend on the nature, size, complexity, and risk profile of the LFI. The respective regulator will aim to intervene when and where necessary in the early stage.

(v) **Focusing on Material Risks:** Risk assessments will focus on material risks and the drivers of risk. LFIs will be evaluated not just about existing risk appetite but also the potential future risks (Risk–Based Supervision Framework for Licensed Financial Institutions in the Eastern Caribbean Currency Union 2017, p. 5). Thus, examiners would be expected to use sound judgment, based on evidence and analysis, in the risk identification and assessment process.

(vi) **Corporate Governance:** The RBS Framework recognizes that an LFI's Board of Directors should provide effective corporate governance with the support of Senior Management. The Board and Senior Management are primarily

responsible and accountable for the LFI's financial safety, soundness, and compliance with laws, regulations, standards, and supervisory directives. The Board and Senior Management expect to be proactive in providing the regulator with timely responses and notification of significant matters affecting the LFI.

(vii) **Holistic Assessment:** The application of the RBS Framework culminates in a consolidated assessment of risk to an LFI. It ensures that the assessment of the risk profile of an LFI remains current and provides an objective basis for allocating supervisory resources. To derive the composite risk; this comprehensive assessment combines an evaluation of basic awarded capital earnings and an evaluation of the liquidity of the LFI (Supervisory Framework 2010, p. 4).

3. Concepts of Globally Accepted Risk-Based Supervisory Framework

To provide a consistent approach to risk assessment over time, the RBS Framework uses numerous concepts. Assessing the risk profile of an LFI is a dynamic and ongoing process comprising the following broad steps.

- Assessment of Gross Business Risk
- Governance and Risk Management
- Financial Resilience

Above three broad group indicators are used for the assessment of individual banks' risk profiles. Each group indicator contains certain indicators; some of the indicators have sub-indicators to conduct detailed assessments.

LFIs divide into three categories based on their systemic importance. The assessment of risk profile indicators for category three institutions, i.e., smaller LFIs categorize at the group indicators level, whereas for category 1 and 2 institutions, which are systemically important, an in-depth assessment which extends to indicators and sub-indicators.

The categorization and scoring of LFIs under various categories are solely based on the scores assigned for size, complexity, substitutability, interconnectedness, and domestic sentiments. Furthermore, categorization is done by the macro-prudential department of the authority at the beginning of each year and this should disclose to the industry.

4. Risk Assessment and Scoring

4.1 Assessment of Gross Business Risk – Group Indicator

4.1.1 Business Model, Strategy, and Plans – Sub indicator

The assessment of this indicator involves an understanding of an institution's business model, and strategic directions, and an assessment of the associated risks based on its financial information, forecasts, business strategy, and plans. The analysis focuses on evaluating the viability of an institution's current business model, verifying its underlying assumptions, and forming a view of its sustainability, given its strategic choices and the impact of the likely changes in the wider economic and business environment in which it operates and the ability of the management to respond to such changes.

Banks rarely become vulnerable quickly, and weaknesses in business structures and strategies are frequently the underlying causes of bank failures. As a result, regulators are now more

aggressive, more willing to use their authority, and more eager to rigorously evaluate the viability of banks' business models after learning from the Great Financial Crisis (GFC) (FSI Insights on policy implementation - Supervisory practices for assessing the sustainability of banks' business models 2022, p. 3).

Pre-existing and structural vulnerabilities related to unsustainable business models are often the root causes of bank failures. The most frequent causes of bank failure include switching from a low-risk business model to a high-risk one and pursuing rapid growth without developing the appropriate risk culture and risk control environment and functions.

Business Model Analysis (BMAs) have both micro and macro implications from a micro-prudential perspective and they are an important part of a more comprehensive assessment of a firm. By identifying the root causes of a bank's weaknesses, BMA's findings may support supervisory actions aimed at the board and senior management to adjust the business strategy and, implement it sustainably. The purpose is to put the bank "back on track" before it becomes a weakened bank and breaches regulatory requirements.

A comprehensive BMA also aims to assess a bank's ability to address changes in its environment which are particularly relevant in the current context. At present, the industry is facing three fundamental developments with potentially deep implications for banks' business models:

(i) The risks associated with a reversal of the low-interest rate environment on banks' activities

(ii) The technological disruption

(iii) Challenges associated with climate change, including physical and transition risks

4.1.2 Inherent Risks – Sub indicator

The evaluation of inherent risks in business operations involves analysis and assessment of the nature of assets and liabilities, off-balance sheet exposures, adequacy of provisions, the sufficiency of collateral valuations, concentration risks, exposure to country risk, and in case of local banks, the impact of their international operations via overseas branches and subsidiaries if any. The assessment focuses on the evaluation of the quality of an institution's portfolios and exposures, both on- and off-balance sheet by identifying and assessing the degree of existing and potential associated risks and impairments.

The inherent risk in significant activities assesses without considering the impact of risk mitigation through the institution's risk management process and controls. An LFI's risk management process and controls consider in the assessment of the Quality of Risk Management. The assessment of inherent risk is primarily qualitative; a thorough understanding of both the nature of the LFI's activities and the environment is essential to identify and assess the inherent risks.

The strategic and reputational risks do not consider as a separate category of inherent risk in the RBS Framework. LFIs expect to have an embedded approach to managing strategic and reputational risks. Reputational risk is a consequence of each of the four inherent risk categories. Reputational risk exists throughout the LFI, and exposure to reputational risk is a function of the adequacy of the institution's internal risk management processes (Risk–Based Supervision Framework for Licensed Financial Institutions in the Eastern Caribbean

Currency Union 2017, p. 4). As a result, it is crucial to consider when evaluating each inherent risk category.

4.1.3 Operating Performance – Sub indicator

The long-term viability of a financial institution depends on its ability to generate quality earnings. The earnings must be sufficient to absorb losses, maintain capital commensurate with asset growth and risk, provide for a return on shareholders' investment, and to attract investor interest should it be necessary to raise outside investments.

The losses deplete capital and liquidity and may erode public confidence. Their accumulation may threaten the ability of an institution to continue operating, bringing up all the potentially disastrous consequences of institutional failure. Earnings are an important indicator of financial health and, in many cases, an early indicator of weakness.

The measurement of earnings is both quantitative and qualitative with far more quantitative measurements available than for other risk profile indicators. These can overstate due to the following:

4.2 Governance and Risk Management - Group Indicator

4.2.1 Management and Governance – Sub Indicator

The purpose of assessment under this group indicator, "Governance and Risk Management," is to ascertain the level of risk mitigation brought about in the institution through an effective governance framework supported by a real risk management framework that complements each other. This group indicator determines the level of

Figure 1: Relationship between Gross Business Risk and Net Risk

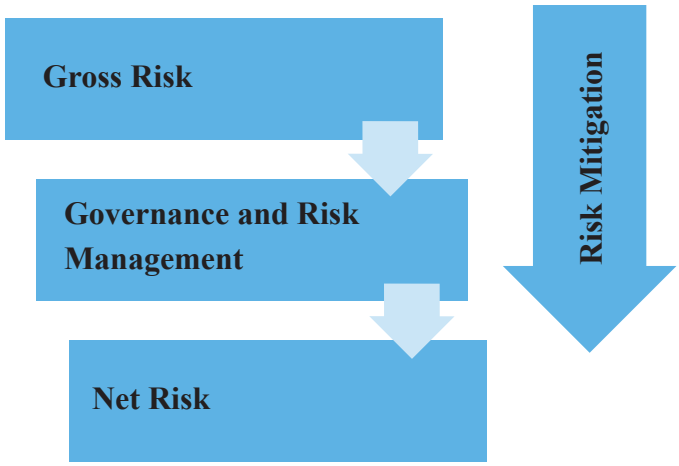


Table 1: Quantitate and Qualitative Factors

No	Quantitative measurements	Qualitative override
1	Return on assets, including their decomposition	Failure to stop accrual on nonperforming assets
2	Return on equity, including its decomposition	Failure to adequately create the provision for loan losses
3	Net interest margin	Earnings resulting from the sale of assets
4	Non-interest expenses to gross income	Earnings from a large volume of risky assets have a high potential for becoming problem assets
5	trading income to total income; and personnel expenses to non-interest expenses	

Table 2: Net Risk Rating post the mitigating effect of Effectiveness of Governance and Risk Management on Gross Business Risk

Low		Level of Gross Risk		
		Moderate	High	
Effectiveness of Governance and Risk Management	Low	Moderate	Moderate to High	High
	Moderate	Low to Moderate	Moderate	Moderate to High
	High	Low	Low to Moderate	Moderate

mitigation of the gross business risk of the firm that assesses under the group indicator "Gross Business Risk."

"Governance and Risk Management" is an indicator not of risk but of mitigation of risk, and the assessment considers the prevalence of favorable mitigating factors that lead to decreased risk and unfavorable factors that lead to increased or persistent net risk.

The risk assessment of LFIs shall cover the following key aspects of Management and governance:

- Organizational Culture
- Policy Framework
- Organisational Framework
- Reporting and Monitoring Framework
- Systems and Processes
- People Perspective
- Stakeholder Management

4.2.2 Risk Management and Controls – Sub Indicator

LFIs expect to have in place separate oversight functions depending on the nature, size, and complexity of their business. Oversight functions are responsible for independent oversight of Operational Management's day-to-day management of the activity. Depending on the nature, size, and complexity of the LFI, there could be a group of individuals or a department independent of the business lines to ensure that internal operating controls are working effectively. Oversight functions provide enterprise-wide independent control (independent of an LFI's revenue-generating functions) of Operational Management (first line of defense) where an institution lacks some of the oversight functions, they are not independent, or they do not have enterprise-wide responsibility, every monetary authority expects other functions, within or external to the LFI, to provide the independent oversight needed.

The five oversight functions may exist in an LFI:

- The Board of Directors – Corporate Governance

- Senior Management - Corporate Governance
- Operational Management - First Line of Defence
- Risk Management and Compliance – Second Line of Defence; and
- Internal Audit - Third Line of Defence

Operational Management:

The purpose of assessment under this indicator is to determine the extent to which the first line of defense performs its functions of mitigating risks. Five areas of risk include credit, market, Information Technology (IT)/ cyber, Money Laundering and Terrorism Financing risk, and operational risk.

Risk Management and Compliance

(i) Risk Management:

Facilitates and oversees the adoption of efficient risk management procedures by Operational Management as a second line of defense (Risk–Based Supervision Framework for Licensed Financial Institutions in the Eastern Caribbean Currency Union 2017, p. 2). The CRO and the Risk Management function are responsible for identifying, measuring, monitoring, and reporting on the risks of an LFI on an enterprise-wide and disaggregated level, independently of the business lines or Operational Management.

(ii) Compliance Function:

Compliance function vests with the responsibility of performing the functions of the second line of defense regarding compliance with regulations and laws applicable to the firm.

The role and responsibilities of the compliance function bear similar characteristics to those of the risk management function, except that there is zero tolerance expected on non-compliance, unlike the risk tolerance based on risk appetite.

The compliance function shall be independent and report to the relevant Board Sub Committee or the Board. Minutes of the meetings should maintain with detailed deliberations recorded. There should be standard reporting packs and agenda items that may supplement additional matters, and meetings must be regular.

Internal Audit

An essential element in assessing the effectiveness of the internal control system is the internal audit function of an entity. "When planned and executed properly, the internal audit gives directors and senior management crucial information regarding flaws in the internal control system, enabling management to move quickly to address those deficiencies" (Interagency Policy Statement on the Internal Audit Function and its Outsourcing 2003, p. 1).

A functioning internal audit system and an efficient internal control system are the responsibility of the board and senior management of LFIs. A system of internal controls with up of both internal controls and information systems. The system of internal controls and the internal audit function should be appropriate to the LFI's size and complexity and the scope and risk of its activities.

4.3 Financial Resilience - Group Indicator

The financial resilience component intends to assess the ability to weather financial and economic stress along with the ability to pay obligations as and when they fall due.

4.3.1 Capital – Sub Indicator

Bank Capital plays a critical role in the promotion of financial system stability as it helps absorb losses, promotes public confidence, helps restrict

excessive asset growth, and provides protection to depositors. When operating losses or other unfavorable financial outcomes occur, capital enables institutions to go on as going concerns during those times.

The assessment of Capital as a tool of financial resilience will evaluate under three elements:

- **Level and Adequacy of Capital:** An evaluation of the adequacy of the current level of capital, the cushion maintained, and the composition of capital will evaluate
- **Access to Additional Capital:** The ability of financial institutions to raise capital both internally and externally should assess
- **Capital Planning Process:** The robustness of the ICAAP to ascertain the bank's outlook in terms of both capital requirements and preparedness and to supplement by the evaluation of the stress testing framework.

4.3.2 Liquidity - Sub Indicator

The capacity to fund assets and pay liabilities when they become due is represented by liquidity. Liquidity is crucial in all LFIs to cover planned and unforeseen balance sheet swings and provide funding for expansion (Sound Practices for Managing Liquidity in Banking Organisations 2000, p. 1). Liquidity risk is the risk of not being able to obtain funds at a reasonable price within a reasonable period to meet obligations as they become due. Because liquidity is critical to the ongoing viability of any bank, liquidity management is among the most important activities that a bank conducts.

The formality and sophistication of liquidity management depend on the size and sophistication of the LFI, as well as the nature and complexity of its activities. Strong liquidity management of a bank requires a variety of funding sources, strong analysis of funding requirements under various stress scenarios, effective management information systems, and contingency funding planning, which helps to establish strong liquidity governance and management of LFIs.

4.4 Recoverability and Resolvability – Group Indicator

The recovery and resolvability of a bank as an indicator of financial resilience attempts to assess the preparedness and ability of the bank to utilize its recovery and resolution framework most in effect at the time of crisis.

Under a robust recovery plan, financial institutions expect to identify and plan for the execution of a range of recovery options to restore long-term viability under a range of idiosyncratic and system-wide stress events without considering the possibility of policy intervention by authorities or access to any exceptional financial support from public funds.

Resolution planning seeks to facilitate the real use of available resolution powers by enabling resolution authorities to identify in advance a feasible and credible resolution strategy for each financial institution and an operational plan for its implementation.

5. Overall rating methodology

Judgmental ratings ranging from 1 to 5 (1 being the best and five the worst) assign to risk profile indicators based on individual indicators. Ratings of individual risk profile indicators have the following connotations:

Rating	Rating level	Description
1	Low Risk	A well-managed institution that exhibits impressive performance and has established a risk management framework relative to its size and complexity. Minor weaknesses identified which do not require immediate supervisory action.
2	Low Medium Risk	Some weaknesses identified require remedial action by the board and senior management. The issues may trigger supervisory concerns in the future if adequate measures are taken within appropriate periods. However, given the institution's overall strength and financial capacity, these issues can address without any intervention by the regulatory authorities.
3	Upper Medium Risk	Supervisory problem is imminent. The institution exhibits serious financial or managerial deficiencies. Supervisory risks could arise if the identified issues are not satisfactorily addressed and resolved.
4	High Risk	Supervisory risks have materialized or there is a remarkably high likelihood that they will materialize. Institutions in this category have risk management practices that are inadequate relative to their size and complexity and the volume and severity of the issues are beyond management's ability or willingness to control. Failure of the institution is probable.
5	Resolution	The risk has crystalized and the institution is no longer viable or is likely to no longer be viable, and any action(s) other than resolution measures cannot be taken within a reasonable time either by the institution or the authority to preserve the institution or the financial stability, and a resolution measure is necessary to preserve financial stability and safeguard the public interest.

(i) A **rating of 1** indicates a well-managed indicator where deficiencies, if any, are minor posing negligible or no risk to the financial systems' stability.

(ii) A **rating of 2** is an indication that some weaknesses identify but the board and management are addressing them.

(iii) A **rating of 3** is an indication that the issues noted in a particular indicator would materialize if Faction took to resolve them.

(iv) A **rating of 4** indicates that a risk to the financial system's stability has either materialized or, it is highly probable that it would materialize.

(v) A **rating of 5** indicates that risk to the financial systems stability has crystallized i.e., the institution has been resolved by the authority.

The overall risk rating has the following description and interpretation.

6. Conclusion

The supervision of a large bank will typically involve more of a focus on prudential than that of a small retail-based licensed bank. It is improper to conclude that risk-based approaches apply only to prudential supervision or specific sectors. Even where there is a preponderance of conduct-based

supervision, RBS can inform the frequency and intensity of supervision, the identification and calibration of inherent risks, and the effectiveness of controls.

All supervisors must prioritize their work. Many would already claim to do this based on risk. Devoting more time to firms and issues perceived to be of the highest risk is common sense. However, RBS provides a rigorous framework for assessing and addressing risks and for the efficient allocation of resources. There is no fixed template for RBS, and individual supervisory bodies need to design structures and approaches that are best suited to their needs.

References:

1. Chakrabarty, K C 2013, BIS Central Bankers' Speeches, viewed 02 May 2023, https://www.bis.org/review/r130515a.pdf.
2. Risk–Based Supervision Framework for Licensed Financial Institutions in the Eastern Caribbean Currency Union 2017, Eastern Caribbean Central Bank, viewed 03 May 2023, https://www.eccb-centralbank.org/p/risk-based-supervision.
3. Risk-Based Supervision 2018, Toronto Centre - Global Leadership and Financial Supervision, viewed 05 May 2023, https://www.torontocentre.org/videos/Risk-Based_Supervision.pdf.
4. Supervisory Framework 2010, Office of the Superintendent of Financial Institutions Canada, viewed 05 May 2023, https://www.osfi-bsif.gc.ca/Eng/Docs/sframew.pdf.
5. FSI Insights on policy implementation - Supervisory practices for assessing the sustainability of banks' business models 2022, Financial Stability Institute, viewed 07 May 2023, https://www.bis.org/fsi/publ/insights40.htm.
6. Interagency Policy Statement on the Internal Audit Function and its Outsourcing 2003, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, viewed 10 May 2023, https://www.federalreserve.gov/boarddocs/srletters/2003/sr0305a1.pdf.
7. Sound Practices for Managing Liquidity in Banking Organisations 2000, Bank for International Settlement, viewed 10 May 2023, https://www.bis.org/publ/bcbsc135.pdf.
8. Bokkerink, M 2013, Guidance on risk-based supervision and risk assessments, viewed 10 May 2023, https://rm.coe.int/16806de43c.
9. Boateng, K 2019, Credit Risk Management and Performance of Banks in Ghana: the 'Camels' Rating Model Approach, International Journal of Business and Management Invention, vol. 2, no. 2, pp. 42-43.
10. Derrick, WH, Fung, Jou, D, Shao, AJ, Jason, JH & Yeh 2018, The China Risk-Oriented Solvency System: A Comparative Assessment with Other Risk-Based Supervisory Frameworks, The International Association for the Study of Insurance Economics, vol. 43, pp. 21-23.
11. Roengpitya, R, Tarashev, N & Tsatsaronis, K 2014, Bank business models, BIS Quarterly Review, pp. 55-65.
12. Risk-Based Supervision Strengthening our Supervisory Approach, Malta Financial Services Authority, viewed 10 May 2023, https://www.mfsa.mt/wp-content/uploads/2020/06/Risk-Based-Supervision-Stengthening-Our-Supervisory-Approach.pdf.

Energy Sector in Sri Lanka and the Importance of Energy Conservation

Erandi Liyanage
Deputy Secretary
Secretariat Department

1. Introduction

Global demand for energy is accelerating day by day. Due to increased industrial activity and economic advances in both developing and developed countries, fossil fuels are still dominating the energy sector. Energy from fossil fuels remains unsustainable owing to their limited, exhausting supplies, geopolitics, and environmental impact. Also, global fossil fuel prices remain highly volatile attributing to supply and demand dynamics as well as geo-political concerns and speculations. For net oil-importing countries like Sri Lanka where more than 50 per cent of its energy demand is met by fossil fuels, the energy import bill carries a significant burden, particularly when the country is experiencing a shortage of foreign currency. The purpose of this article is to discuss the importance of energy conservation and the propagation of renewable energy sources in promoting energy security.

1.1 What is Energy?

Scientists define energy as the ability to do work (United States Energy Information Administration). There are many different forms of energy, including heat, light, motion, electrical, chemical, and gravitational. These forms of energy can be grouped into two general types of energy such as potential or stored energy and kinetic or working energy. Over the years, people have learned how to transform energy from one form to another and then use it to do work in modern civilization. For example, stored chemical energy in coal or natural gas and the kinetic energy of water flowing in rivers can be converted to electrical energy, which in turn can be converted to light and heat energy. (United States Energy Information Administration).

Energy sources can be broadly categorized as renewable, where an energy source can be replenished within a short period of time, and non-renewable, where an energy source that we use cannot be recreated at all or it takes millions of years to recreate. Renewable energy sources include solar energy emanating from the sun wind energy caused by uneven heating of the earth's surface by the sun, geothermal energy generated deep within the earth; biomass energy extracted from burning plant material, tidal wave energy produced in the sea, and hydro energy extracted from running water; all of which can be turned into electricity and heat energy; Non-renewable energy sources, on the other hand, include fossil fuels such as crude oil, natural gas, and coal.

1.2 Non-Renewable Energy

Non-renewable resources, such as coal and oil, are the primary source of power in the world,

and they are used to power vehicles, factories, and homes. Since non-renewable energy sources are limited and have depleted drastically, it would be a major problem for mankind as they largely rely on non-renewable sources for present energy needs. Although these energy sources are relatively affordable, there are numerous negative consequences of non-renewable energy, including their detrimental environmental impact, particularly the damage to the environment during their extraction. The combustion of fossil fuels has also released greenhouse gases into the atmosphere, which has contributed to global warming. The limited supply of non-renewable energy sources also remains a problem, resulting in supply and demand mismatches, leading to energy crises.

1.3 Renewable Energy

Due to the various problems caused by energy crises, most countries of the world have considered transitioning from fossil fuel based energy sources to renewable energy sources. With greater development of ecological awareness, people are more concerned about the health of the planet. In response to the ambitious Paris Agreement in 2015, many governments and business leaders have set targets and made commitments to reduce carbon emissions. In addition to protecting the environment, renewable energy can provide greater energy independence through the diversification of the energy mix of an economy. Renewable energy may be referred to as an alternative energy, serving as alternative options to the most used non-sustainable energy sources. Renewable energy is not a new technology, as people have used it many centuries ago for multiple purposes including transportation, milling, heating, lighting, etc.

Although with the industrial revolution, humans have turned to non-renewable energy sources that are much more convenient and efficient to use, renewables are becoming a much more important source of energy at present. Traditionally, hydro power has been a reliable source of energy, with features such as scalability, quick ramping speeds and longer lifetime. However, hydropower tends to be geographically restricted. During the last decade, a notable expansion has been observed in other renewable sectors which are spanning from small scale to large scale energy projects, from domestic rooftop solar panels to giant offshore wind farms. Renewables such as wind and solar power, which inherently have the problem with intermittency, have become very reliable when they are coupled with energy storage, in fact, that some rural communities are entirely relied on such energy sources for lighting and heating.

1.4 Energy for an Economy

Energy is a key source of economic growth as energy is involved in many economic activities as a fundamental input. The use of energy drives economic productivity and industrial growth and is central to the operation of any modern economy (Zahid, 2008). Since energy is essential to conduct production processes, reliable energy at an affordable price is required to have better economic development as well as create job opportunities. When considering energy policy, it is mainly focused on prices, security of supply, and environmental protection (Kohl, 2004). Energy crises played a key role in the economic downturn of the 1970s. Since then, the relationship between energy consumption and economic growth has been studied extensively. Many studies suggest that energy consumption has a high positive correlation with economic growth. Accordingly, the countries with higher per capita GDP tend to consume more energy per head. Barney and Franzi (2002) argue that energy is responsible for at least half the industrial growth in a modern economy, while representing less than one-tenth of the cost of

production. Morimoto and Hope (2004) examined the impact of electricity supply on economic growth in Sri Lanka and found unidirectional causality running from electricity supply to economic growth. Therefore, they concluded that the power shortage in Sri Lanka has a serious impact on the country's economic growth.

2. Energy Sector in Sri Lanka

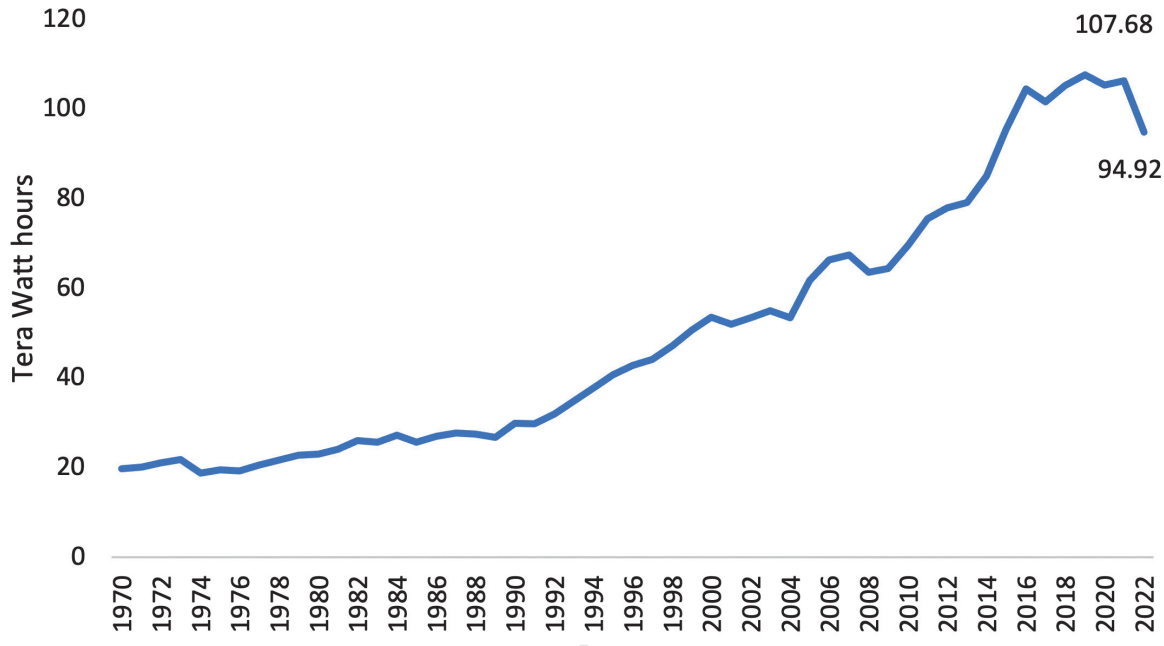
Total energy consumption in Sri Lanka has increased over the period, in line with evolving needs of the public, despite some transitory volatility due to global and domestic shocks. Primary energy consumption in Sri Lanka during the last decades is shown in Figure 1. Average energy consumption per year has increased to more than 100 Tera watt hours (Twh) since 2016 from 21 TWh in 1970s and 26 TWh in 1980s. However, energy consumption has moderated in 2022 to 95 TWh with the disrupted energy supply amidst deepened economic crisis, while COVID-19 pandemic induced demand drops also led to the slowdown in energy consumption.

Petroleum, which has been imported as crude oil and finished products, remained the primary energy supply, followed by biomass, coal, hydro, and new renewable energy. The country has succeeded in delivering modern energy sources to its whole population, such as petroleum products and liquefied petroleum gas (LPG). Figure 2 shows Sri Lanka's primary energy consumption by source in 2021.

Considering the sectoral demand, the largest energy consuming sectors in 2021 were the transport sector which primarily uses petroleum as the source of energy and household, commercial and other sectors, using 35 per cent of the country's total energy demand each, while the industrial sector accounted for a share of 30 per cent (Figure 3).

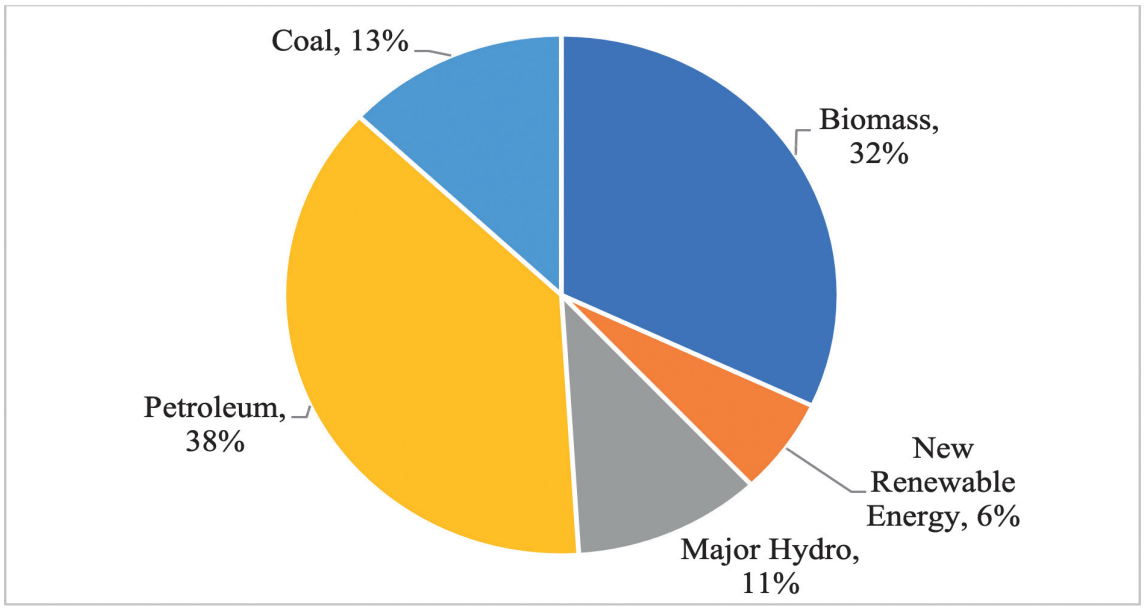
From the energy supply point of view, electricity is the main secondary energy source in Sri Lanka. However, the electricity sector in the country is heavily reliant on carbon-intensive primary

Figure 1: Primary Energy Consumption in Sri Lanka



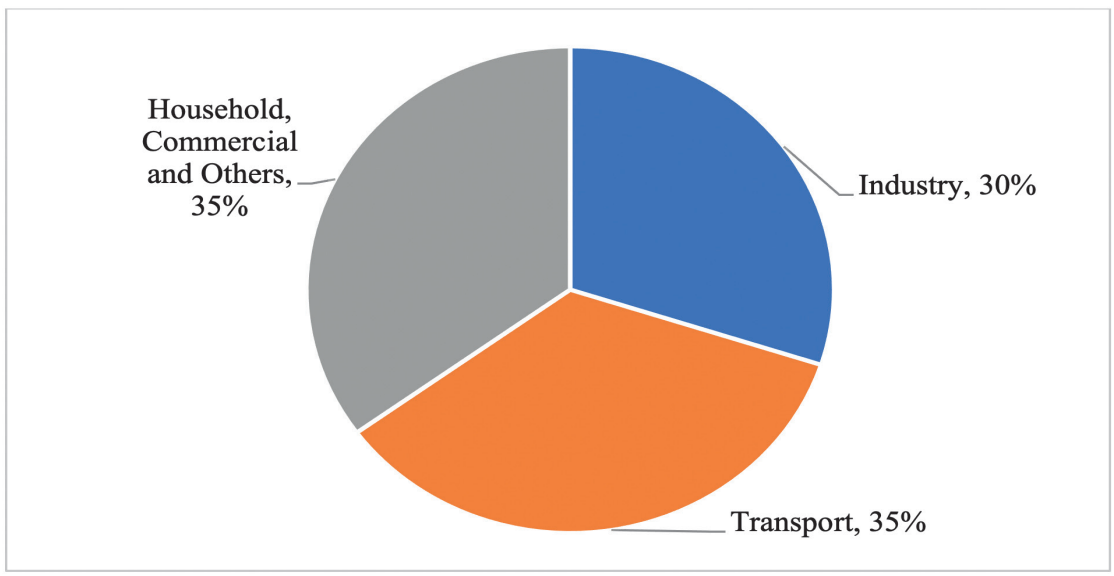
Source: World Bank

Figure 2: Sri Lanka's Primary Energy by Source – 2021



Source: Sri Lanka Sustainable Energy Authority

Figure 3: Sri Lanka's Energy Demand by Sector - 2021



Source: Sri Lanka Sustainable Energy Authority

energy sources. According to the latest published data, electrification of households reached 99.3 percent in 2016 due to the government's strong policy decisions for accelerating electricity access to every economic category of the population. The total amount of electricity generated in 2022 declined to 15,942 GWh from 16,716 GWh in 2021. During the last decade, oil-fired power plants have contributed 30 per cent of the total power generation and coal power contributed 29

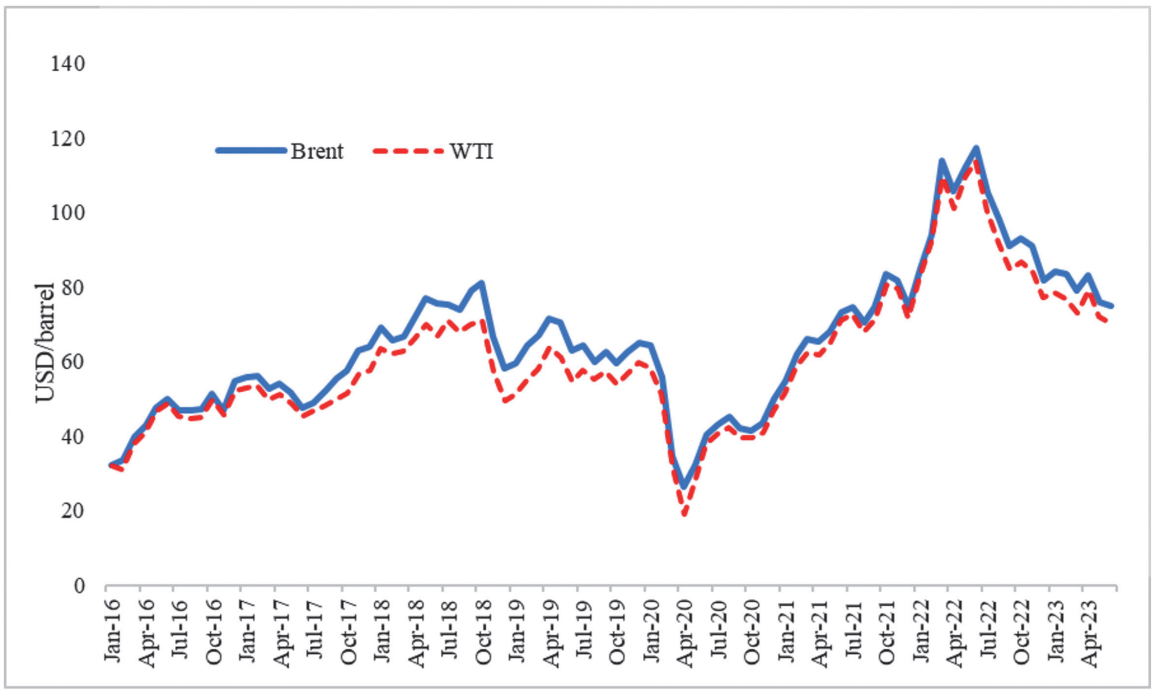
per cent, while share of hydropower and other non-conventional renewable energy (NCRE) sources such as solar and wind power amounted to 37 percent and 4 percent, respectively. Reflecting the increased reliance on low-cost renewable sources over the expensive thermal sources, the contribution for the electricity generation from hydro and other renewable energy sources accounted for 52 per cent in 2022 compared to 29 per cent in 2012. According to the long-Term Electricity Generation Plan of Ceylon Electricity Board (CEB), the country plans to increase renewable energy capacity from 2,711 MW at the beginning of 2022 to 8,783 MW by the end of 2030 and to 16,963 MW by the end of 2042 (CEB, 2022). The government set a goal of achieving 70 per cent renewable energy generation by 2030 and becoming carbon neutral by 2050.

2.1 Challenges faced by Sri Lanka's Energy Sector

Given the scarcity of foreign exchange, high inflation and rising energy cost in Sri Lanka, the ongoing military conflict between Ukraine and Russia aggravated the prevailing Sri Lankan economic crisis. Following the Ukraine crisis, Europe imposed trade sanctions on Russia, the largest oil exporter of natural gas fuels to the European economy and the US, which affected its fuel supply to the world. The countries affected by the sanctions turned to the Middle East creating a monopoly market in the Middle East. Hence, the increase in fuel demand has resulted in increased prices and the resulting volatility in global oil prices has worsened Sri Lanka's economic conditions, as Sri Lanka is a net oil importing country and oil accounts for one third of import expenditure. Figure 4 shows trends in crude oil prices from January 2016 to June 2023.

In the past, oil price in the international market (Brent) had reached its highest level of US dollars 147.50 per barrel in July 2008 due to a steady increase in demand from emerging economies such as India and China, low OPEC spare capacity in oil production, weakened US dollar, supply constraints

Figure 4: Monthly Average Crude Oil Prices in the International Market



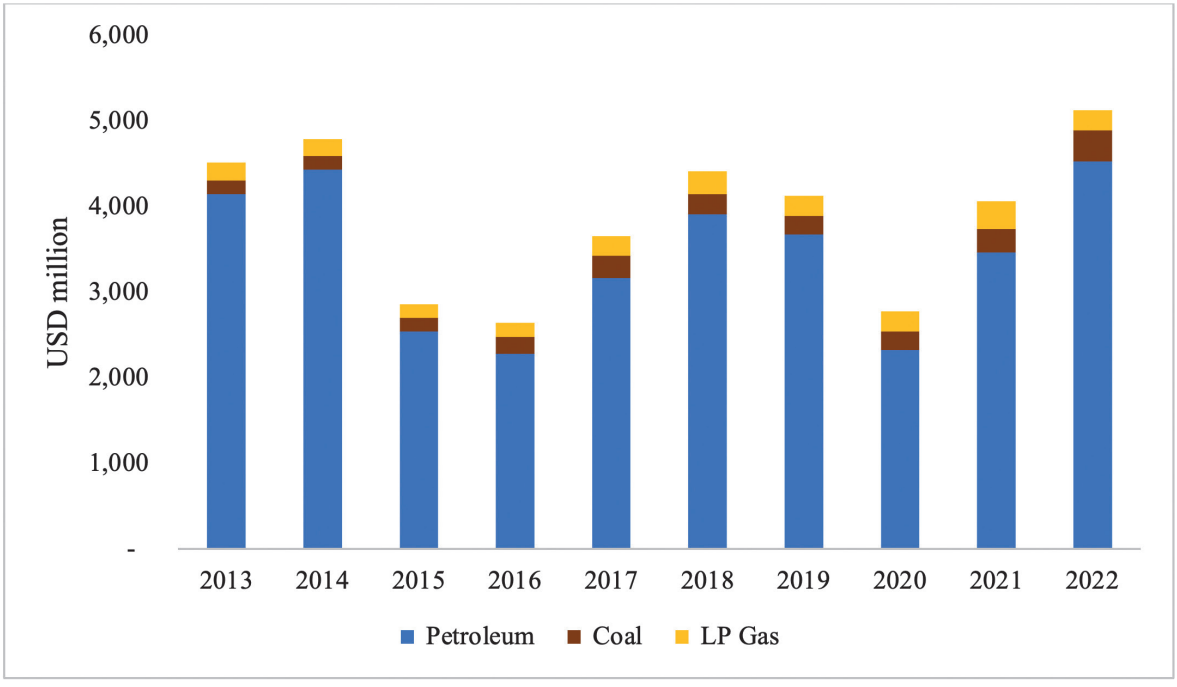
Source: Central Bank of Sri Lanka

resulted from geo-political uncertainties, and low inventories and refinery. However, oil prices declined rapidly towards the end of 2008 with the restoration of supply from Brazil and Nigeria and subdued global demand for oil due to financial turmoil and slowing down of the world economy. With some fluctuations, global crude oil prices escalated and briefly reached US dollars 140 per barrel in March 2022 for the first time since July 2008 following concerns in geopolitical tensions between Russia and Ukraine leading to tightening of supplies. However, from the beginning of the second half of 2022, a declining trend was observed in prices on account of the slowing global growth along with the aggressive monetary policy tightening measures adopted by the major central banks around the world that were expected to dampen global energy demand, continued COVID-19 restrictions in China and substantial release of crude oil from strategic reserves of the United States (CBSL, 2023). Although upward pressure was observed during the latter part of the year with the announcement of production cut by the OPEC, oil prices stood at around US dollars 82 per barrel by the end of 2022 and US dollars 75 per barrel by end June 2023.

In line with the trends in global crude oil prices, the average price of crude oil imported by the Ceylon Petroleum Corporation (CPC) was US dollars 100.11 per barrel in 2022 and US dollars 68.86 per barrel in 2021. The average coal price in the international market also increased sharply to US dollars 213.8 per metric ton in 2022 from US dollars 126 per metric ton in 2021. As a result, fuel import expenditure, including coal, has increased to US dollars 4,897 million, which was 27 per cent of total import expenditure. Prices of LP gas stood at US dollars 806.9 per metric ton compared to US dollars 767.8 per metric ton in 2021. The expenditure on imports of energy sources for the last 10 years is shown in Figure 5.

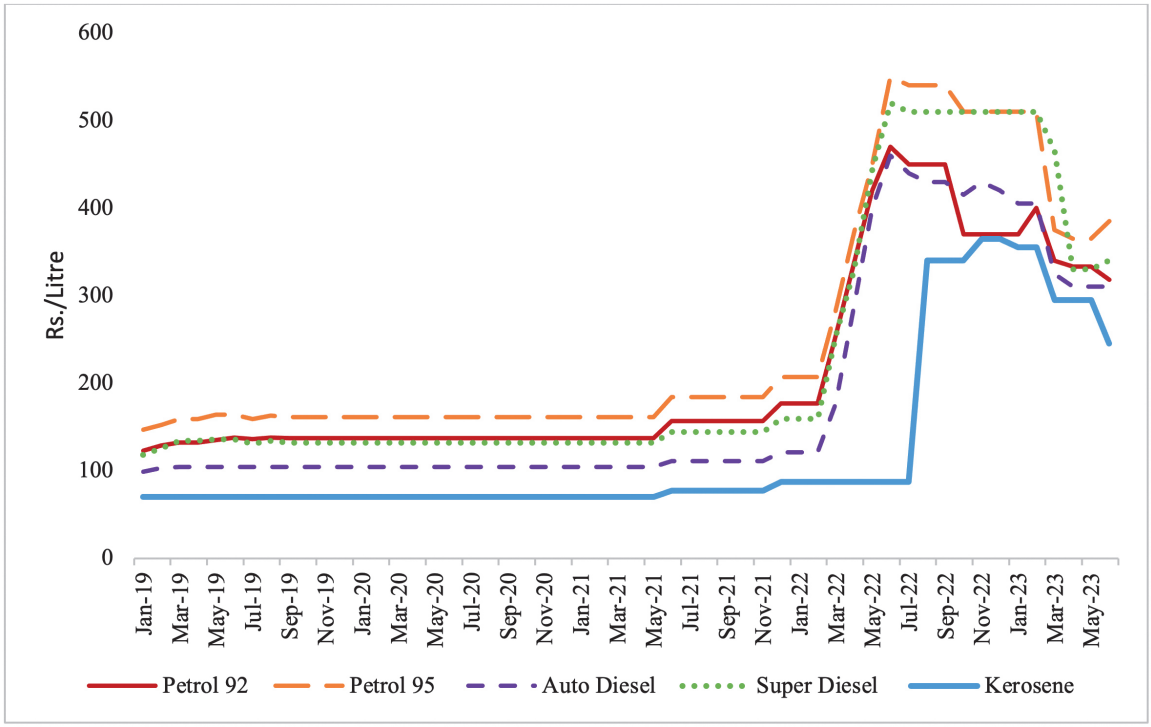
The continuous escalation of global crude oil prices warranted the government to increase the domestic retail prices of key petroleum products in 2021 after a hiatus of over one and a half years. The

Figure 5: Expenditure on Imports of Energy



Source: Central Bank of Sri Lanka

Figure 6: Retail Prices of Petroleum Products



Source: Ceylon Petroleum Corporation

government reintroduced a fuel pricing formula in 2022 to adjust fuel prices to reflect input costs based on factors such as costs related to unloading, taxation, production, operational and administration and profit margin. Accordingly, local fuel prices were adjusted several times depending on the volatilities of the rupee and the world market price fluctuations. Retail prices of petroleum products of Ceylon Petroleum corporation (CPC) from 2019 are given in Figure 6.

High oil prices have adverse implications for the fiscal sector. As fuel and electricity have been provided to the general public at below cost recovery prices for a long time, this incomplete pass-through of high oil prices has made budgetary operations more difficult. Provisions of government subsidies to maintain the prices at arbitrarily low prices during the past, limit the government's ability to spend on other essential and important development goals. The subsidy component for oil has worsened the inflationary situation due to the need for additional budgetary allocation for subsidizing oil consumption. On the other hand, if the government reduces or exempts taxes on petroleum products to maintain arbitrarily low prices in the domestic market, the government incurs revenue losses. However, domestic oil retail prices have increased considerably from 2022, based on the pricing formula. The resulting tendencies towards the conservation of energy will reduce the subsidy component for energy, thereby reducing fiscal burden.

Loss-making state-owned enterprises which supply electricity and fuel such as the Ceylon Electricity Board (CEB) and the Ceylon Petroleum Corporation (CPC) have an array of issues, including operational inefficiencies, poor governance and mismanagement, weak market orientation and excessive workforce, which in turn has become multifaceted macroeconomic burden to the country.

Energy security in the country was challenged by the recent economic crisis, emphasizing the need of progressive reforms that lead people away from fossil fuels. Unprecedented fuel shortages in 2022 created long queues for petrol and extended power cuts affecting economic activity and generating social unrest. Increased energy cost resulted in financial difficulties for all, particularly the poor and vulnerable.

Considering the above facts, it is proven that now is the time to take immediate measures for energy conservation in the country.

2.2 Importance of Energy Conservation

Energy supply must be increased notably in the years to come to meet the growing energy demand from both, the developed and emerging countries, as steady and reliable energy supplies are crucial to enhance growth prospects of these economies. It is noteworthy that over the next few decades, energy will be the main priority of all countries in the world, especially the poor countries, which strive for accelerated economic prosperity. It is important that fast-depleting energy sources are conserved to ensure that their use is optimized, while preserving these resources for the use of future generations. Energy conservation means that the reduction in the consumption of energy by producing and using less of it. This can be done by adjusting behaviours and habits. On the other hand, people can save energy by using it more effectively, especially where it involves using technology that requires less energy to perform the same function. Such conservation measures lead to minimum environmental pollution, generally accompanied by the use of non-renewable energy sources.

Diversification of energy resources and their transportation routes and the efficient use of local and imported energy resources are important to improve energy security and reduce dependency on imported energy sources. In addition to that, improving energy efficiency saves money and reduces carbon emissions. Energy conservation is important because consumption of non-renewable sources impacts the environment. Green House Gas (GHG) emissions such as Carbon Dioxide (CO_2) and Methane (CH_4) tend to be at high levels when oil, coal, and gas are combusted in power stations, motor vehicle engines, and cargo ships. GHGs in the atmosphere act as a transparent blanket, which traps heat close to the earth's surface, which contributes to global warming. It is possible that this inclining warming trend could significantly alter weather conditions.

From a policy perspective, the causality (unidirectional or bidirectional) between energy consumption and economic growth may have a significant impact on energy conservation policies. The energy conservation measures may or may not be taken depending on the direction of causality. For example, the unidirectional causality from economic growth to energy consumption implies a less energy-dependent economy, therefore, energy conservation policy has no effect on economic growth. But causality from energy consumption to economic growth implies that in energy-dependent economy, energy conservation policies may harm economic growth. No-causality in either direction means energy conservation policy does not affect economic growth. Finally, bi-directional causality indicates both high level of economic activity and energy consumption mutually influence each other (Zahid, 2008).

2.3 Measures to Conserve Energy

The economic burden of the high cost of energy emphasizes the importance of adopting comprehensive measures to curtail the demand. Adjustment of petroleum prices and electricity tariffs reflecting the actual cost of supply is a must to provide price signals leading to a reduction

in unnecessary consumption. User behavior has a significant effect on energy conservation. If people can do a home energy audit, it helps to identify the areas where it is losing energy and what steps can be taken to overcome them. People may buy energy-efficient electrical appliances with energy star ratings to reduce energy consumption while saving money, although these appliances are relatively expensive. Energy usage of several electrical appliances is given in Table 1.

In the context of energy conservation, it is necessary to promote the use of public transport systems. But it is apparent that the current quality and capacity of the public transport system are not sufficient for the demand in Sri Lanka. This

Table 1

Electrical Item	No. of watts (W)	Average use per day (hrs)	Units per month (kWh/month)
LED Lamps	11	5	1.65
CFL Bulbs	15	5	2.25
TV (color)	100	4	12
Water Pump	400	1	12
Radio	40	4	4.8
Table Fan	40	8	9.6
Ceiling Fan	75	8	18
Electric Kettle	1,500	1	45
Grinder	250	0.25	1.875
Hot Plate	4,000	1.50	180
Washing Machine	1,500	0.50	22.5
Air Conditioner	2,500	8	600
Iron	1,000	1.00	30
Rice Cooker	600	2.00	36
Refrigerator	110	18	59.4
Deep Freezer	120	16	57.6
Water Heater	3,000	0.50	45
Ordinary Bulb	75	4	9
Florescent Bulb	50	4	6
Mercury Bulb	15	4	1.8
Floor Polisher	500	0.50	7.5
Vacuum Cleaner	850	0.50	12.75

Source: Ceylon Electricity Board

has led to increased reliance on private energy-inefficient means of transport. The railway, which is considered to be the most efficient mass transportation system, needs to be improved and promoted. In order to take measures to improve railway facilities, it is paramount that the railway is operated as a commercial entity and developing business areas with Public Private Partnerships, modernizing passenger and freight transport by rail, thereby increasing its operational efficiency. Electrification of railways systematically can reduce the dependance on fossil fuels, which would also assist in directing the funds to much needed areas. Further, increasing fuel-efficient vehicle fleets, minimizing travel by better urban designs, improving on-road fuel efficiency through better traffic management, promoting of low carbon fuels, and encouraging people to shift to nonmotorized modes, including cycling and walking, are some measures that can promote sustainable energy usage in the transport sector. As a considerable amount of fuel is wasted due to traffic congestion in peak hours in urban areas, policies to reduce congestion to save fuel and increase energy efficiency are important. One of the policies is vehicle pooling that emphasizes on a shared use of private vehicles. Hydrogen has been a proven technology, not only as a source for generating electricity, but also for powering transportation as well. Hydrogen powered vehicles, especially for mass transport, have already been tested and are in operation in the developed countries. However, technologies based on green concepts are still evolving, and would be a key contributor to the global energy transition. Sri Lanka, being a tropical island surrounded by the sea, will be able to benefit from the abundant sources of water around the country and the sunlight to generate hydrogen as a fuel for both electricity and transport. Commercialization and validation of technologies such as electrolyzers, fuel cells, and hydrogen-powered vehicles will be a key deciding factor in this regard.

Generally, energy is wasted due to technical as well as non-technical reasons. If it is possible to minimize losses in the electricity transmission and distribution network, that is at around 8.9 percent in 2022 in CEB, considerable gain can be received. Further, measures can be taken to upgrade oil-distributing pipelines to mitigate the waste.

The general public should be educated on the importance of energy conservation. Effective public awareness programmes must be launched targeting all the consumers in the country. Public awareness can be focused the areas such as the use of alternative energy sources or the use of energy-efficient devices like light-emitting diode (LED) bulbs. Although such devices cost more initially, they save in the long run because of low energy use and longer lifetime. Typical housekeeping measures such as switching off unnecessary lamps, disconnecting televisions directly from the supply point rather than leaving them on standby mode and ironing all the clothes at once. These measures can also be adopted to conserve energy to a significant level without any additional cost burden to the user. Utilizing IoT (Internet of Things) for homes, that would assist in the efficient use of appliances can further cut down energy bills and conserve energy.

Also, measures can be taken to introduce energy conservation measures to government institutions including switching off power in offices outside working hours and maintaining air-conditioning temperature at the highest possible without harming the thermal comfort levels. Generally, the requirement of the room temperature is 25 C with a relative humidity of 55 percent to 60 percent in order to maintain thermal comfort within the space. But it is possible to increase this temperature up to 26 C or even to 26.5 C. Again, wireless IoT sensors placed throughout these buildings can collect real-time data such as the operation of individual machinery, lighting, HVAC, ventilation

systems, refrigeration units etc. and can optimize the efficient use of them.

3. Sustainable Energy for Sri Lanka

As Sri Lanka is highly dependent on fossil fuels, the country faces a wide range of challenges in the transition towards sustainable energy, such as cost-reflective energy pricing, grid modifications, and energy conservation. Non-renewable energy sources are likely to be more financially attractive than NCRE sources since the financial costs of fuel oil and coal do not encompass the true lifecycle cost of environmental effects of the technologies employing those sources. Prior to the sharp decline in oil prices due to COVID-19 pandemic, most petroleum products in Sri Lanka were at subsidized prices without reflecting their true economic costs. Therefore, ensuring efficient pricing mechanisms for the power and energy sector will remain a major initiative to improve efficiency in energy consumption. Net metering systems, investment tax credits, carbon credits, subsidized interest rates for project loans, green bonds, and soft loans are possible financial interventions to promote NCRE projects in the country. However, in order to optimize the sustainability of the use of renewable energy, implementation of such projects should be based on Life-Cycle Assessments (LCA). Even though the energy generation phase from sources such as wind or solar have a low-to-zero carbon footprint, their lifecycle, from the extraction of raw materials to the disposition at the end of life could have a significant impact on the society and the environment, and this needs to be carefully assessed and mitigatory actions should be taken to reduce the impact.

Sustainable energy use for economic growth and development will require significant transformations in physical systems, policies, regulatory frameworks, and people's perceptions with regard to the production and consumption of energy. To this end, the government, private sector, and the general public must make a collaborative effort to ensure clean energy development and, thereby, sustainable growth and development in the country. Meanwhile, commitment towards clean energy transition is essential such as strong policy certainties, clear directions for renewable energy investment, and encouraging required structural changes for CEB and CPC.

4. Conclusion

Global demand for energy is accelerating due to increased industrial activity and economic advances in both developing and developed countries. Energy from fossil fuels remains unsustainable owing to their limited, exhausting supplies and environmental impact. Prices of fossil fuels fluctuate frequently, based on supply and demand fundamentals, as well as geopolitical concerns and speculation. It is a challenge for net oil-importing countries like Sri Lanka to import fuels. Given the scarcity of foreign exchange, rising energy cost in Sri Lanka, as well as external factors like ongoing military conflict between Ukraine and Russia affected the fuel supply in Sri Lanka. As energy is a key source of economic growth, uninterrupted energy supply is vital for the country's economic growth.

Conservation of energy sources is important ensuring that their use is optimized, while preserving these resources for the use of future generations. This can be done by adjusting behaviours and habits. Although Sri Lanka has taken strong measures for energy conservation, which has resulted in an increase in the use of renewable energy sources, promoting energy security is of paramount importance and should be taken up at the highest levels with high priority by all sectors across the economy. Such efforts

would bring maximum economic benefits both to the individual energy users and to the country as a whole. Hence, mass-scale promotion of energy saving development projects and greater awareness programmes on energy conservation must be launched covering the whole country.

References

Barney, F. and Franzi, P. (2002). "The Future of Energy from Future Dilemmas: Options to 2050 for Australia's Population, Technology, Resources and Environment". CSIRO Sustainable Ecosystems, pp 157-189

Bhatia, S. C. (2014), "Geothermal Power Generation", Advanced Renewable Energy Systems, pp 334-388

Kohl, W. L. (2004), "National Security and Energy", Encyclopedia of Energy, pp 193-206

Long Term Generation Expansion Plan 2023 - 2042, (2022), Ceylon Electricity Board, Colombo

Morimoto, K. and Hope, C. (2004). "Impact of Electricity Supply on Economic Growth in Sri Lanka". Energy Economics, Volume 26, pp 77-85

Sri Lanka Energy Sector Assessment, Strategy and Road Map (2019), Asian Development Bank

Sri Lanka Energy Balance (2021), Sri Lanka Sustainable Energy Authority

United States Energy Information Administration, https://www.eia.gov/energyexplained

Zahid, A. (2008), "Energy - GDP Relationship: A Causal Analysis for the Five Countries of South Asia", Applied Econometrics and International Development, Volume 8 - 1, pp 167-180

Organizational Talent Management: Retaining the Best

H. D. Nathasha Nimeshika
Assistant Director, Human Resources Department

1. Introduction

Organizational talent management is a crucial aspect of human resource management that focuses on attracting, developing, and retaining top talent within a company. The goal of talent management is to ensure that the organization has the right employees in the right positions to support its strategic goals and achieve its objectives. Talent management encompasses a range of activities, including recruitment, employee development, performance management, succession planning, and rewards and recognition. These processes work together to create a culture of high performance, foster employee engagement and satisfaction, and support the long-term success of the organization. Effective talent management requires a strategic approach, strong leadership, and a commitment to ongoing improvement. It is important for organizations to regularly assess and adjust their talent management processes to ensure that they remain effective and aligned with the changing needs of the business. By prioritizing talent management, organizations can create a competitive advantage and remain successful in the long-term. With a talented and motivated workforce, organizations can drive innovation, improve performance, and achieve their ultimate organizational goals.

In the past, talent management was often viewed as a one-off event, such as during the hiring process or annual performance reviews. However, in recent years, it has become clear that talent management must be a continuous process to be effective. The main reason for this shift is the recognition that the workforce is constantly evolving, and the skills as well as the abilities that were once in high demand may no longer be as relevant. The concept of talent management emerged in the late 1990s as a response to the changing business environment and the need for organizations to have a competitive advantage. In the past, organizations focused primarily on hiring employees based on their technical skills and experience. However, as the business environment became more complex and competitive, organizations realized that they needed to focus on hiring and developing employees with

specific talents and versatile abilities that could lead the organization towards success.

The emergence of talent management can also be attributed to several other factors such as changing workforce demographics, rise of technology, shift towards a knowledge-based economy, and the need for organizations to adapt rapidly to the changes. As a result, the value of human capital increased, companies started focusing on attracting and retaining employees with specialized skills and knowledge. The phrase "war for talent" was first coined in a 1997 article in Fortune magazine (Boudreau, 2018). The war for talent highlighted the growing competition for top talent, and the need for companies to have a comprehensive talent management strategy. As a consequence, organizations not only needed to continuously assess their talent needs and invest in the development of their employees to ensure that they remain competitive in the turbulent business environment, but also, demanded that talent management become a continuous process.

1.1 What is Talent Management?

The concept of talent is widely discussed and studied in the fields of psychology, human resource management, and organizational behavior. There are many different definitions and approaches to understanding talent, but it is generally viewed as a strategic process that is critical to the success of organizations. It is a way to identify and develop the skills, abilities, and the potential of employees in order to optimize their performance and contribution to the organization's goals.

Talent management refers to "the process of attracting, identifying, developing, engaging, retaining, and deploying individuals who are considered particularly valuable to an organization" (Collings, Mellahi, & Cascio, 2021). Talent management is a critical component of achieving organizational success and it requires a strategic and comprehensive approach to managing an organization's workforce. Attracting skilled individuals who share the organization's values and goals is a crucial first step in talent management. The next step involves identifying high-potential employees through performance evaluations, assessments, and interviews. Once these individuals are identified, providing them with training and development opportunities is key to helping them reach their full potential. Engaging employees through profound work, recognition, and a positive work environment is vital in promoting motivation and commitment. To retain high-performing employees, it is essential to offer them career advancement opportunities, competitive compensation packages, and a supportive work culture. Deploying talent by assigning individuals to roles that align with their skills, abilities, and aspirations maximizes their potential and contributes to the organization's overall success.

Scullion and Collings (2011), define talent management as a systematic, strategic, and planned approach to managing individuals who are considered to be of particular value to an organization. This approach involves a range of practices aimed at attracting, developing, deploying, and retaining top talent within an organization. The systematic and planned nature of talent management implies that it is a deliberate and proactive process rather than a reactive response to employee performance or retention issues. Through talent management, organizations can enhance employee engagement and commitment, optimize talent utilization, and drive organizational success. Therefore, the effective implementation of talent

management practices has become a key priority for many organizations.

In today's fast-paced competitive business environment, talent management has become a critical aspect of organizational success. Companies are increasingly recognizing that attracting, developing, and retaining top talent is key to gaining a competitive advantage and achieving strategic goals. As such, talent management has emerged as a strategic priority for many organizations, with a growing emphasis on identifying and nurturing talented and high-potential employees. According to Armstrong and Taylor (2014), talent management involves "the activities and processes that are designed to identify, develop, deploy, and retain talented and high-potential employees". In general, it can be seen as a comprehensive approach to managing an organization's workforce, with a particular focus on identifying and developing high-potential individuals who are critical to the organization's success.

Nevertheless, there are alternative perspectives that offer criticisms of talent management. One of the main criticisms is that talent management tends to focus too much on high-potential individuals or "stars" at the expense of the broader workforce (Collings, Mellahi, & Cascio, 2021). This approach may create resentment and undermine team morale, as other employees may feel undervalued or overlooked. This is because talent management often focuses on identifying and developing high-potential employees, which can create a sense of competition among employees and undermine teamwork and collaboration. It can also create a sense of competition among employees that can be detrimental to organizational culture (Lawler, 2018). This can lead to a culture of cutthroat competition, where employees are pitted against each other in the pursuit of recognition and rewards. Furthermore, some have argued that talent management can be exclusive and overlook individuals who do not fit the traditional notions of talent or potential (Wolfe, 2019). This can create a sense of unfairness and resentment among employees who feel that they are not being given a fair chance to succeed.

Despite the criticisms, in the context of human resources management, the talent management function plays a vital role in retaining individuals with the necessary talent and skills to support the long-term success of the organization. Leadership must identify and nurture talent within the organization promoting teamwork and healthy level of work competition. Effective talent management is critical for organizations to remain competitive and achieve their goals in a constantly changing business environment.

1.2 Importance of Talent Management

Talent management is becoming increasingly important in today's rapidly changing business environment, where organizations face intense competition and pressure to remain competitive in the post COVID-19 economic crisis era. Organizations can ensure that they have the right employees with the right skills to meet the demands of the market and stay ahead of the competition by investing in talent management. It aids organizations to improve productivity and performance. By investing in the development and training of employees, organizations can improve the skills and knowledge of their workforce, which can lead to improved productivity and performance. Additionally, by providing employees with opportunities for professional development and growth, organizations can increase their motivation and job satisfaction, which can lead to higher levels of performance and productivity.

One of the important aspects of talent management is promoting diversity and inclusion. Effective talent management programs can help organizations to create a diverse and inclusive workplace that leverages the strengths of all employees, regardless of background, experience, or demographic characteristics. This is significant as diversity can bring a range of perspectives and experiences to the table, which can lead to increased creativity, innovation, and problem-solving abilities. Additionally, by creating an inclusive workplace, organizations can increase the engagement and motivation of employees, as well as reduce the likelihood of discrimination and bias in the workplace.

Talent management also plays a key role in fostering a positive work culture. A positive work culture can also reduce turnover rates, as employees are more likely to stay with an organization if they are happy and satisfied in their work. This is important because the cost of replacing employees can be significant, and by reducing turnover, organizations can save time and resources that can be better invested in other areas.

It enhances organizational competitiveness. By attracting and retaining top talent, organizations can position themselves as leaders in their industry and stay ahead of the competition. Additionally, by investing in the development and training of employees, organizations can ensure that their workforce is equipped with the skills and knowledge necessary to meet the demands of the market and stay ahead of the competition. This is particularly important in today's rapidly changing business environment, where organizations must be able to adapt and evolve in order to remain competitive.

2. Talent Management Strategies

Developing and retaining talent within an organization is essential to maintaining a competitive edge and driving long-term success. A talent management strategy entails a dynamic framework that facilitates the growth and development of a company's human capital by means of forward-thinking recruitment and performance management initiatives. Furnishing employees with the development opportunities, regular performance evaluations aimed at providing constructive feedbacks, retainable compensation packages, monitoring of employee satisfaction through surveys, and flexible work arrangements policies are some examples for talent management strategies that can be embedded.

Providing employees with opportunities for skill-building and professional development can help retain top talent and keep them engaged. This can be done through on-the-job training, coaching, and mentorship programs. Regularly evaluating employee performance and providing constructive feedback can help employees understand their strengths and areas for improvement, leading to improved job satisfaction and retention. Offering employees well-defined career paths and growth prospects is an effective approach to keep them motivated and engaged, which reduces the likelihood of employee turnover (Edwards & Wright, 2021). Offering competitive compensation packages, including salaries, bonuses, and benefits, can help retain top talent and attract new employees. Regularly conducting employee engagement surveys can help organizations understand what drives employee satisfaction and what changes need to be made to improve retention. Research also suggests that flexible work arrangements can improve employee performance,

increase job satisfaction, and positively impact an organization's bottom line (Allen et al., 2015). By implementing these strategies, organizations can effectively develop and retain top talent, improving their overall performance and competitiveness.

According to experts, the primary objective of strategic talent management is to create a highly skilled and motivated workforce capable of driving organizational success and enabling the organization to achieve its long-term objectives (Gubman, 2017). Thereupon organizations can enhance employee satisfaction and retention, which can, in turn, boost productivity and efficiency (Nohria, Groysberg, & Lee, 2008).

2.1 The Impact of Technology on Talent Management

The impact of technology on talent management is significant and continues to evolve as new technologies emerge. Technology has enabled organizations to streamline and improve various aspects of talent management, from recruitment and employee development to performance management and collaboration.

One of the most notable impacts of technology on talent management is the ease with which organizations can identify and attract top talent. For example, online job postings and candidate management systems have made it easier for organizations to reach a wider pool of potential candidates (Collings, & Mellahi, 2021).

Technology has also transformed how organizations develop and manage their employees. With the rise of e-learning platforms, employees can access training and development opportunities online and complete them at their own pace. According to a survey by LinkedIn Learning, 59% of Learning and Development (L&D) professionals plan to increase their investment in online learning platforms in 2021 (LinkedIn Learning, 2021). Additionally, the use of Artificial Intelligence (AI)-powered tools for employee development is on the rise, with companies using data-driven insights to personalize learning experiences for their employees (Deloitte, 2020).

It has also impacted how organizations manage employee performance. The traditional annual performance review has been replaced by continuous feedback and check-ins, enabled by digital tools. According to a study by Gartner, 94% of HR leaders believe that continuous performance management is important for driving business success (Gartner, 2021). Additionally, the use of people analytics tools has enabled organizations to gather data on employee performance and use it to inform decision-making around promotions, training, and development (Deloitte, 2020). With the implementation of real-time performance management systems, the talent management through performance management is becoming more prevalent (Collings, & Mellahi, 2021). These systems allow organizations to provide employees with regular feedback and make data-driven decisions about employee performance.

Technology has made it easier for teams to collaborate and communicate, improving overall productivity and job satisfaction (Collings, & Mellahi, 2021). The use of big data analytics has also made it possible for organizations to gain insights into workforce trends and make data-driven decisions related to talent management.

Technology continues to have a profound impact on talent management, providing organizations with new tools and opportunities to improve their performance and competitiveness.

2.2 The Role of Leadership in Promoting a Culture of Talent Management

Talent management is an essential aspect of any organization, as it plays a crucial role in improving employee performance, productivity, and retention. However, the success of talent management initiatives largely depends on the ability of leadership to promote and foster a culture of talent management within the organization.

Leadership needs to set clear expectations for talent management throughout the organization. This includes outlining the goals and objectives of the talent management strategy and communicating them effectively to the employees. According to a study by PwC, organizations with effective communication and clearly defined objectives are more likely to retain their top talent (PwC, 2021). It plays a critical role in promoting a culture of talent management within an organization. It is essential for leadership to cultivate a culture that emphasizes learning and development within the organization. Enabling employees to upskill and reskill, promoting a growth mindset, and encouraging them to take ownership of their career development are important aspects of fostering a culture of learning and development within the organization. Research supports the notion that providing such opportunities can increase employee retention. Further, the leadership needs to emphasize the importance of diversity and inclusion in talent management. This includes creating a diverse and inclusive workplace culture, promoting diversity in the recruitment and selection process, and ensuring that employees from all backgrounds have equal opportunities for career growth and development. According to a study by Deloitte (2020), organizations with inclusive cultures are twice as likely to meet or exceed financial targets.

Leaders who prioritize the development and retention of top talent will not only improve organizational performance but also create a positive and productive work environment for employees.

Effective line managerial support can substantially enhance employee learning and career progression (Zhang & Zhou, 2021). In order to achieve this, managers need to have the necessary skills and knowledge to identify talent, provide feedback, and offer opportunities for development. Line managers should keep an eye out for employees who show exceptional skills, dedication, and potential for growth. They should regularly communicate with their team members and get to know their strengths and weaknesses to identify potential talent. Recent research by Lee and Shin (2021) emphasizes that the line managers should provide regular feedback to their employees to help them understand their performance and highlight areas for improvement. They should be clear about expectations and set achievable goals for employees. Further, line managers should acknowledge and reward employees who achieve exceptional results or demonstrate exceptional potential. This could include promotions, bonuses, or other incentives that help motivate employees to continue to excel. Line managers play a critical role in talent management, as they are responsible for the day-to-day supervision of employees and ensuring that they are meeting their objectives and growing professionally.

Therefore, the role of leadership, both, the line managers and the HR managers, is crucial in promoting a culture of talent management within an organization.

3. Challenges in Talent Management

Despite its importance, talent management presents several challenges that organizations must address. Attracting and hiring top talent,

retaining high-performing employees, managing a global workforce, lack of line managerial support, succession planning and employee development are highlighting challenges arise with the talent management.

According to Cascio and Boudreau (2015), organizations face intense competition for top talent, and attracting and retaining the best employees is a constant challenge. Employers must offer competitive compensation and benefits packages, opportunities for career growth and development, and a positive work environment to attract and retain top talent. Once an organization has successfully hired talented employees, they must work to keep them engaged and motivated. This requires creating a positive work environment, providing opportunities for career development, and offering competitive compensation and benefits (DeCenzo and Robbins, 2016). As organizations expand globally, they must be able to manage employees from different cultures and backgrounds. This requires understanding cultural differences and adapting HR practices to meet the needs of a global workforce. The lack of line managerial support can pose a significant challenge for talent management initiatives by means of limited resources, inconsistent execution, inadequate feedback, poor talent development, and limited career advancement opportunities. As a result, employees may not receive the necessary training and development to reach their full potential, impacting their engagement, retention, and ultimately the organization's success. Noe, Hollenbeck, Gerhart, and Wright (2017), as baby boomers retire and the workforce becomes younger, organizations must develop effective succession plans to ensure that key positions are filled by qualified candidates. This requires identifying high-potential employees and providing them with the training and development they need to assume leadership roles. Developing employees requires identifying individual learning needs and providing relevant training and development opportunities. However, organizations may struggle to allocate resources and time to employee development, especially in times of budget constraints or when competing priorities take precedence.

Overcoming challenges in talent management helps to create a positive workplace culture that stimulates employee engagement, motivation, and satisfaction. This results in reduced absenteeism and turnover rates, as well as increased employee morale and loyalty. Therefore, it is essential for organizations to prioritize and invest in overcoming challenges in talent management to achieve long-term success.

4. The future of Talent Management

The future of talent management is expected to bring significant changes that will impact the workforce in various ways. With advancements in technology, new tools and methods will emerge to support the recruitment, development, and retention of talent. The following are some of the key trends that are likely to shape the future of talent management (Gartner, 2021).

- Increased use of AI and machine learning: AI-powered systems will be used to analyze large amounts of data to identify top talent, streamline recruitment processes, and provide targeted development opportunities for employees.
- Focus on diversity and inclusion: Organizations will need to implement programs and policies that promote diversity and inclusion to attract and retain top talent.

- Remote work: With more employees working from home, organizations will need to adapt their talent management practices accommodating this new reality.
- Continuous learning and development: Organizations that prioritize employee development and provide opportunities for employees to learn and grow will be better positioned to attract and retain top talent in a competitive marketplace.
- Flexibility in work arrangements: In the future, employees will seek more flexible work arrangements, and organizations will need to be prepared to accommodate these demands.

It is evident that the future of talent management will be influenced by technology, diversity and inclusion, remote work, and continuous learning and development. Organizations that are able to adapt to these trends will have a competitive advantage in attracting and retaining top talent.

5. Conclusion

In conclusion, talent management plays a critical role in ensuring the success of organizations. Organizations can build a strong foundation for long-term growth and competitiveness through identifying, attracting, developing, and retaining top talent. Effective talent management strategies include developing a strong employer brand, leveraging technology, promoting diversity and inclusion, and providing opportunities for continuous learning and development. Leaders play a crucial role in promoting a culture of talent management, encouraging employee growth and development, and creating an environment that fosters innovation and collaboration. As the workforce and technology continue to evolve, organizations will need to stay ahead of the curve by embracing new approaches to talent management that enable them to attract, develop, and retain top talent.

Reference

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. Psychological Science in the Public Interest, 16(2), 40-68.

Armstrong, M., & Taylor, S. (2014). Armstrong's handbook of human resource management practice (13th ed.). Kogan Page.

Boudreau, J. W. (2018). Re-imagining talent management for the gig economy. Human Resource Management Review, 28(3), 284-291.

Cascio, W. F., & Boudreau, J. W. (2015). Talent Management: A Critical Review. Human Resource Management Review, 25(2), 216-226.

Collings, D. G., & Mellahi, K. (2021). Strategic talent management: A review and research agenda. Human Resource Management Review, 31(1), 1-14.

Collings, D. G., Mellahi, K., & Cascio, W. F. (2021). Global talent management and the challenges of managing talent in organizations. In D. G. Collings, K. Mellahi, & W. F. Cascio (Eds.), The Oxford Handbook of Talent Management (pp. 3-23). Oxford University Press.

DeCenzo, D. A., & Robbins, S. P. (2016). Fundamentals of human resource management. John Wiley & Sons.

Deloitte (2020). Human Capital Trends 2020. https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2020/introduction.html

Edwards, M. R., & Wright, M. (2021). How employer brand image and organizational culture impact employee retention. Journal of Business Research, 130, 583-592.

Gartner. (2021). The Future of HR: 2021 and Beyond. https://www.gartner.com/en/human-resources/insights/future-of-hr-2021

Gubman, E. (2017). Talent management: A critical review. Human Resource Management Review, 27(2), 180-190.

Lawler, E. E. (2018). Reinventing talent management: Principles and practices for the new world of work. Berrett-Koehler Publishers.

Lee, Y., & Shin, J. (2021). A study on the effects of performance feedback on job performance and job satisfaction in the public sector. Public Personnel Management, 50(2), 192-213.

LinkedIn. (2021). The Future of Recruiting: Insights from 2,800 Talent Acquisition Leaders. Retrieved from https://business.linkedin.com/content/dam/me/business/en-us/talent-solutions/resources/pdfs/linkedin-the-future-of-recruiting-report.pdf.

Noe, R. A., Hollenbeck, J. R., Gerhart, B., & Wright, P. M. (2017). Human resource management: Gaining a competitive advantage. New York: McGraw-Hill Education.

Nohria, N., Groysberg, B. and Lee, L.E., 2008. "Employee motivation." Harvard business

review, 86(7/8): 78-84.

PwC. (2021). Talent management: A practical guide for HR. Retrieved from https://www.pwc.com/gx/en/services/people-organisation/publications/talent-management.html.

Scullion, H., & Collings, D. G. (2011). Global talent management. Routledge.

Wolfe, L. A. (2019). The inclusive talent management imperative. Journal of Business and Psychology, 34(1), 1-12.

Zhang, X., & Zhou, J. (2021). The role of line managers in talent management: A systematic review and agenda for future research. Human Resource Management Review, 31(3), 100773.