

ISSN 0974-763X

# SOUTH ASIAN JOURNAL OF MANAGEMENT RESEARCH (SAJMR)

Volume 14, No. 2

March, 2024

**SPECIAL ISSUE**



**Chhatrapati Shahu Institute of Business  
Education & Research (CSIBER)**

(An Autonomous Institute)

University Road, Kolhapur-416004, Maharashtra State, India.

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# SOUTH ASIAN JOURNAL OF MANGEMENT RESEARCH (SAJMR)

ISSN 0974-763X

(An International Peer Reviewed Research Journal)



Published by

**CSIBER Press, Central Library Building**

**Chhatrapati Shahu Institute of Business Education & Research (CSIBER)**

University Road, Kolhapur - 416 004, Maharashtra, India

Phone : 0231-2535706, 2535707. Fax : 0231-2535708

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## **South Asian Journal of Management Research (SAJMR)**

**Volume 14, No. 2, March 2024**

**Editor: Dr. Pooja M. Patil**

**Publisher**

**CSIBER Press**

**Central Library Building**

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Business Education & Research (CSIBER)  
University Road, Kolhapur – 416004, Maharashtra, India.  
Phone: 91-231-2535706/07, Fax: 91-231-2535708,  
Website: [www.siberindia.edu.in](http://www.siberindia.edu.in)  
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**ISSN 0974-763X**

**Price: INR 1,200/-**

**Editor:Dr. Pooja M. Patil**

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**CSIBER Press**

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## **Editorial Note**

South Asian Journal of Management Research (SAJMR), is a scholarly journal that publishes scientific research on the theory and practice of management. All management, computer science, environmental science related issues relating to strategy, entrepreneurship, innovation, technology, and organizations are covered by the journal, along with all business-related functional areas like accounting, finance, information systems, marketing, and operations. The research presented in these articles contributes to our understanding of critical issues and offers valuable insights for policymakers, practitioners, and researchers. Authors are invited to publish novel, original, empirical, and high quality research work pertaining to the recent developments & practices in all areas and disciplines.

Cross-functional, multidisciplinary research that reflects the diversity of the management science professions is also encouraged, the articles are generally based on the core disciplines of computer science, economics, environmental science, mathematics, psychology, sociology, and statistics. The journal's focus includes managerial issues in a variety of organizational contexts, including for profit and nonprofit businesses, organizations from the public and private sectors, and formal and informal networks of people. Theoretical, experimental (in the field or the lab), and empirical contributions are all welcome. The journal will continue to disseminate knowledge and publish high-quality research so that we may all benefit from it.

**Dr. Pooja M. Patil**  
Editor



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(SAJMR)**

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# Human Rights-Based Approaches to Capital Punishment: An Analysis of International Viewpoints

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## Abstract

There is not a single criminological justification for the death penalty that is more persuasive than those grounded in human rights. Because there is still a dearth of scientific evidence to support the death penalties superior efficacy over other forms of punishment, the argument that the death penalty is required to deter crime has lost credibility. The widely accepted criminological goal of the offender's rehabilitation is undermined by the death penalty. Conversely, death penalty has been deemed to be in violation of the right to life and dignity of the person. This article explores the human rights-based approach to death penalty by assessing international standards and viewpoints, predominantly from the UN.

**Keywords:** Human Rights, Right to Life, Death Penalty, Limitations, Rights Based Approach

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## Introduction

The right to life and the right to be free from harsh, inhumane, or degrading treatment are two fundamental human rights that are violated by the death sentence, according to Amnesty International (Bardarova *et al*, 2013). The Universal Declaration of Human Rights, other international and regional human rights documents, as well as national constitutions and legislation all acknowledge both of these rights. When law enforcement officers must act quickly to save their own lives or the lives of others, or when a nation is at war, the defense of life and the defense of the state may, in some circumstances, be seen to justify the taking of life by state officials. Even under these circumstances, the use of lethal force is constrained by generally recognized human rights and humanitarian law principles to prevent misuse. However, the death penalty is not a measure used in response to a direct threat to life. It is the deliberate execution of a prisoner for punishment—a goal that can be achieved by other means (Van Den Hagg, 1969).

It is clear that torture is horrible (Anas, 2005). An execution is a severe physical and emotional attack on a person who has already been made powerless by government agents, much like torture. The harsh nature of the death penalty is evident not just in the execution but also in the time a person spends in prison while waiting to be executed since they are continuously thinking about dying at the hands of the state. No matter how heinous the offence was for which the prisoner was found guilty, this cruelty cannot be condoned. How can it be acceptable for public officials to target not merely the body or the mind, but the prisoner's very life? If it is unlawful to subject a prisoner to electric shocks and mock executions, how can it be legal to assault the prisoner's very life? One of the most terrifying types of torture is threatening to kill a prisoner. It is forbidden to use torture. How is it acceptable to subject a prisoner to the same danger of a court-ordered death sentence that will be carried out by the prison administration?

Beyond the victim, the death sentence is harsh to the victim's family, the prison guards, and the government officials responsible for carrying out the execution (Graessner *et al*, 2001). According to data from different regions of the world, being an executioner can be incredibly unsettling, if not traumatizing (Ebury, 2021). If the duties demanded of them in the execution of the death penalty contradict with their own ethical beliefs, judges, prosecutors, and other officials could also encounter morally challenging situations. The two human rights that are most frequently referenced in discussions regarding the death sentence are the right to life and the right to be free from harsh, inhuman, or degrading treatment. But other rights are also violated by the death sentence.

According to Amnesty International's own evidence and the annual findings of the UN Special Rapporteur on extrajudicial, summary, or arbitrary executions, inmates are frequently sentenced to death in proceedings that do

not follow international standards for a fair trial. Prisoners who could receive the death penalty are frequently represented by unskilled attorneys, and occasionally by no attorneys at all. If the defendants are unfamiliar with the language used in court, they may not understand the accusations or the evidence brought against them. Court documents' interpretation and translation services are frequently insufficient.

The right to appeal to a court with greater authority and the ability to request clemency or a commuted death sentence are sometimes denied to inmates. In some jurisdictions, summary procedures are used to hear capital cases in special or military courts. Such actions go against accepted norms in international human rights instruments and undercut the right to a fair trial. Articles 2 and 7 of the Universal Declaration of Human Rights are violated by the frequent disparate application of the death sentence to members of socially marginalised groups. It represents the utmost rejection of the human person's worth and dignity, as stated in the preamble of the Universal Declaration of Human Rights.

No criminological argument in favour of the death sentence would be stronger than arguments based on respect for human rights. The claim that the death sentence is necessary to deter crime has lost credibility due to the persistent dearth of scientific evidence to support its superior effectiveness over alternative forms of punishment. The death sentence undermines the widely acknowledged criminological objective of rehabilitation of the offender.

#### Restriction Though International Human Rights Standards

The evolution of international human rights norms has favored ever-tighter limitations on the use of the death sentence. The majority of states that still impose the death penalty actually follow this trend of progressive shrinking in practice. The UN General Assembly declared in a resolution on the death penalty in 1971 that "the main objective to be pursued is that of progressively restricting the number of offenses for which capital punishment may be imposed, with a view to the desirability of abolishing this punishment in all countries" (resolution 2857 (XXVI) of 20 December 1971). The UN Commission on Human Rights in resolutions 1997/12 of April 3, 1997, and 1998/8 of April 3, 1998, as well as the European Union in the Guidelines to EU Policy towards Third Countries on the Death Penalty ("EU Guidelines"), adopted in 1998, all reaffirmed the goal of progressive restriction of capital offenses. The General Assembly first stated this goal in 1977 (resolution 32/61 of December 8, 1977).

Article 6(2) of the International Covenant on Civil and Political Rights (ICCPR), which was adopted by the UN General Assembly in 1966, specifies that the death penalty may only be enforced in nations that have not abolished it. The Human Rights Committee established in accordance with the ICCPR stated in a general comment on Article 6 of that treaty that "the expression 'most serious crimes' must be read restrictively to mean that the death penalty should be a quite exceptional measure" (general comment 6, adopted by the Committee at its 16th session on July 27, 1982). The UN Economic and Social Council (ECOSOC) stated in the Safeguards Guaranteeing Protection of the Rights of Those Facing the Death Penalty, adopted in 1984 ("ECOSOC Safeguards"), that the death penalty should only be applied to the most serious crimes and that the definition of these crimes "should not go beyond intentional crimes with lethal or other extremely grave consequences."

Various explicit guidelines and declarations regarding the offences for which the death sentence shouldn't be applied have been made. According to Article 4(4) of the American Convention on Human Rights (ACHR), "political offenses or related common crimes" are not subject to the death penalty. According to the Human Rights Committee, "the imposition... of the death penalty for offences which cannot be characterized as the most serious, including apostasy, committing a third homosexual act, engaging in illicit sex, embezzlement by officials, and theft by force, is incompatible with article 6 of the Covenant" (UN document No. CCPR/C/79/Add.85, 19 November 1997, paragraph 8). According to the UN Special Rapporteur on extrajudicial, summary, or arbitrary killings, the death sentence "should be eliminated for crimes such as economic crimes and drug-related offences" (UN document No. E/CN.4/1997/60, 24 December 1996, paragraph 91).

The approach generally reflects the worldwide standard that only the most serious offences, particularly those with grave effects, are eligible for the death penalty. The majority of states that do carry out executions now only do so for murder, however some still may have the death penalty as a legal punishment for other offences.

Furthermore, the number of executions in the most of these nations has decreased to the point where it now only accounts for a very small portion of all reported homicides. (The most notable exception is China, which executes convicts for non-violent offences including theft and embezzlement and continues to execute prisoners more frequently than all other nations combined.) The adoption of the International Criminal Court Statute by a global conference in Rome in July 1998, which does not include the death penalty for the crimes that many consider to be the most heinous of all—genocide, other crimes against humanity, and war crimes—is another development in the restriction of capital offences. Similar to this, when the International Criminal Tribunals for the former Yugoslavia and Rwanda were founded in 1993 and 1994, the UN Security Council did not include the death sentence as a punishment for these serious crimes. The implication of these rulings is that the death sentence should not be used, given the well-established criteria that it should only be applied to the most egregious offences in nations that have not yet abolished it.

International norms have also evolved in such a way that they now prevent an increasing number of categories of persons from being utilized as targets for the death sentence in nations that still use it. Juvenile offenders—those who were under the age of 18 at the time of the offense—are excluded from many legal and social contexts that it is beginning to resemble a standard of customary international law. The Fourth Geneva Convention of 1949 relative to the Protection of Civilian Persons in Time of War and the two Additional Protocols of 1977 to the Geneva Conventions of 1949, as well as more recently in the Convention on the Rights of the Child (Article 37(a)), which has been ratified by all UN member states with the exception of two, prohibit the execution of juvenile offenders.

In reality, most people abide by the rule. Only 18 juvenile offenders were executed globally between January 1990 and October 1998, according to Amnesty International, who kept track of the executions in six different nations. Only one nation, the United States of America, was responsible for carrying out half of the executions. It is also common practice to exclude pregnant women, new mothers, and those over 70 years old, as specified in various ways by the ICCPR, the ACHR, and the ECOSOC Safeguards. ECOSOC also recommended that UN member states abolish the death penalty "for persons suffering from mental retardation or extremely limited mental competence, whether at the stage of sentence or execution" (emphasis added) in resolution 1989/64, which was adopted on 24 May 1989. The ECOSOC Safeguards also state that executions shall not be carried out on "persons who have become insane" (emphasis added). These exclusions are not as frequently noticed. Amnesty International has recorded numerous instances of convicts with extremely low mental capacities who were given death sentences and occasionally executed, mainly in the USA.

The ICCPR's Article 6 and the ACHR's Article 4, as well as the ECOSOC protections and other UN resolutions, repeat and expand on the procedural protections that must be followed in all death sentence cases. All international standards for a fair trial are included, as well as the rights to appeal to a higher court and request clemency. The UN has repeatedly expressed its desire to ensure the strictest legal procedures and the greatest protections for those accused in capital cases in nations where the death penalty has not been abolished in General Assembly resolution 2393 (XXIII) of November 26, 1968, and subsequent resolutions. The requirement to uphold minimal standards in cases involving the death penalty is also evident.

Although the safeguards are in place in theory in many nations that still utilize the death penalty, they are frequently not upheld in practice, and even in cases when an effort is made to uphold them, the death sentence is frequently nevertheless applied arbitrarily. Some defendants receive death sentences and are executed while others convicted of the same crimes are not, due to factors including insufficient legal representation and prosecutorial discretion. The protections haven't been able to stop the death sentence from being applied arbitrarily or from being applied to those who are innocent of the crimes for which they were convicted.

#### The Emergence of Abolition as a Human Rights Norm

International organisations have become more vocal in their support for abolition on human rights grounds and have adopted pronouncements to that effect. National court rulings declaring the death penalty to be unconstitutional are starting to support these remarks and policies. The UN General Assembly said in resolution 2857 (XXVI) on December 20, 1971, that abolishing the death sentence worldwide is desirable. The General Assembly's resolution 32/61 of December 8, 1977, and most recently the UN Commission on Human Rights' decision 1998/8 of April 3, 1998, both reaffirmed the need to eliminate the death sentence. The Human Rights

Committee observed that Article 6 of the ICCPR "refers generally to abolition [of the death penalty] in terms which strongly suggest... that abolition is desirable" in its general comment therein. The Committee comes to the conclusion that "all abolitionist measures should be viewed as advancements in the enjoyment of the right to life... "

The UN Commission of Human Rights stated in resolution 1997/12 dated 3 April 1997 that it was "convinced that the abolition of the death penalty contributes to the enhancement of human dignity and to the progressive development of human rights." The Commission on Human Rights reaffirmed this remark in resolution 1998/8 on April 3, 1998.

The UN Special Rapporteur on extrajudicial, summary, or arbitrary executions has stated that he "strongly supports the conclusions of the Human Rights Committee and emphasizes that the abolition of capital punishment is most desirable in order to fully respect the right to life" (UN document No. E/CN.4/1997/60, paragraph 79). He has urged governments of nations that still use the death sentence to "deploy every effort that could lead to its abolition."

The Parliamentary Assembly of the Council of Europe declared in resolution 727 dated 22 April 1980 that "capital punishment is inhuman" and urged member nations that still had the death penalty for crimes committed during peacetime to abolish it. The request was expanded in resolution 1044 (1994), which was passed on October 4, 1994, and urged "all parliamentary bodies throughout the world, which have not yet abolished the death penalty, to do so promptly in line with the majority of Council of Europe member states." It declared that it "considers that the death penalty has no legal place in the criminal justice systems of modern civilized communities, and that its administration may readily be likened to torture and be considered as harsh and degrading punishment within the context of modern civilized societies.

Three international treaties that call for the elimination of the death penalty have been ratified by the international community. The other two are regional, while one is global in scope. They are the Second Optional Protocol to the International Covenant on Civil and Political Rights, aiming to abolish the death penalty, adopted by the UN General Assembly in 1989, the Protocol to the American Convention on Human Rights, concerning the abolition of the death penalty, and Protocol No. 6 to the European Convention for the Protection of Human Rights and Fundamental Freedoms ("European Convention on Human Rights"), adopted by the Council of Europe in 1982. The other two treaties provide for the complete abolition of the death penalty, but they also permit states parties to retain the death penalty in times of war if they make a declaration to that effect at the time of ratification or accession. Protocol No. 6 to the European Convention on Human Rights provides for the abolition of the death penalty in peacetime.

In compared to the total number of parties to the parent treaty, Protocol No. 6 has been ratified by the most states (28 as of October 1998) and signed by an additional five. As of the same date, 33 governments had ratified the Second Optional Protocol to the ICCPR, and another three had signed it. In contrast, six states had ratified and one had signed the Protocol to the American Convention on Human Rights to Abolish the Death Penalty. States parties and signatories are both continuing to increase in number. Only in 1998 did Estonia and Latvia ratify Protocol No. 6, and Nepal and Costa Rica signed the Second Optional Protocol to the ICCPR.

#### The Road to Abolition – Conclusion

Although it seems that abolition is on the rise, the fight must yet be waged repeatedly. Before finally - we hope - rejecting the death penalty, each nation must go through a process that is frequently drawn out and unpleasant, considering for itself the arguments for and against. There can be calls to reinstate the death penalty even after it is abolished. The arguments must be reviewed again if the calls are serious enough. The administration and lawmakers must decide whether to abolish the death sentence. Even though the majority of people favor the death penalty, this decision can still be made. This has most likely always been the case historically. However, it rarely causes a significant public uproar when the death sentence is abolished, and once abolished, it nearly always remains so.

This must imply that while a majority of the populace in a certain nation supports the death penalty, a majority of the populace is also open to accepting its abolition. When respondents are asked to indicate their position on

the death sentence in surveys, this aspect of public opinion is typically not mentioned. The surveys would likely provide a greater knowledge of the complexity of public opinion and the extent to which it is founded on an accurate awareness of the actual state of criminality in the country, its causes, and the tools available to battle it if the questions were more complex. Despite the numerous studies that have been conducted, the claim that the death penalty deters crime more successfully than alternative penalties has now been substantially refuted by the lack of scientific evidence. However, a large portion of the populace thinks it does. The evidence from science contradicts their viewpoint. In other words, the scientific knowledge of the death penalty's deterrent effect is lacking among the general people.

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**Assessing the Contents of the Ethical Leadership and Anti-corruption Training Program, and the Leaders ‘Competency Assessment, Certification and Licensing Methods: From the Experts Perspective (Experience)**

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**Abstract**

The aim of this study was to assess the contents of ethical leadership and anti-corruption training courses, including assessment, certification, and licensing. Further, the study aims to make appropriate recommendations on the design of ethical leadership and anti-corruption training, assessments, and certification programs that will be implemented by the Federal Ethics and Anti-Corruption Commission of Ethiopia (FEACC). The sources of data for this study were purposefully selected experts (anti-corruption commissions and universities) through a questionnaire, interview, and FGD. The study findings show that the ethical leadership and anti-corruption training topics, themes, or modules for leaders are very different from the existing modules in their scope, coverage, and themes. In addition, the study also identified some of the methods/tools and procedures for ethical leadership competency assessment and evaluation; certification and licensing, that has not been considered by the commission so far, and the government may use as a norms for the leaders appointment, in hiring, firing and promotion. The study also recommend that, the FEACC should expand the existing ethics and anti-corruption training by focusing on ethical leadership and anti-corruption training program as per the suggestion of the study. Based on this initial experts suggestion the commission should conduct further studies in detail on the training program, leaders ethical leadership evaluation, certification and licensing as well as the leaders assessment and evaluation tools/methods; certification and licensing procedures. Finally, further research will be needed to the training methodology, approach, content design for emerging leaders, middle level leaders and top leaders. In addition, the specific standard for leaders’ competency assessment and evaluation and certification need to be considered in order to scale up this initial study.

**Keywords:** Anti Curroption, Traning, Ethical Leadership, Licensing, Governance, Corrapution Prevention.

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**Introduction**

Bishop and Preston (2000), arguing for the infusion of ethics in the management of public organization point out that: “nothing is more dangerous to the well-being of the body politic than a public official who is technically competent or strategically astute but *ethically illiterate or unfit*.” The Scholars reveal that, corruption emerges from the problem of "ethics" where ethics is about doing the right thing, adhering to the regulations' principles, fulfilling one's own responsibilities, and producing a result. According to the United Nations, "ethics" is an inspirational approach that focuses on preventing corruption and immoral behavior (Gebre, 2016). Furthermore, according to Saint-Martin and Thompson (2006), corruption occurs when public officials use public authority illegally for private ends. Mark (2002) confirms that officials of public organizations abuse ethical rules and standards in order to benefit themselves and others in the form of bribery and nepotism by compromising the public interest. Most of these unethical and immoral acts occur in the areas of human resource appointment and promotion, public contract management, and so on. To reduce such illegal activities, the government should promote professional integrity, establish an adequate salary system, and formulate transparency mechanisms. In addition, Gray, Hellman, and Ryterman (2004) suggest that corruption can be reduced by taking corrective measures such as developing codes of conduct, controlling conflicts of interest, and strengthening anti-corruption programs and projects. Furthermore, the lack of leadership



accountability and the absence of a clearly defined leadership code, both of which have a direct impact on each other, have been extensively discussed.

Though the boundaries of today's leadership role appear to be somewhat limitless, some operational and pragmatic codes of conduct must be implemented for all leaders of public institutions. This may reduce some of the frequently reported leadership misbehavior in public institutions, such as corruption" (Dereje, 2021, p.205).

Therefore, countries opted to establish ACAs on their own in different forms. Some countries delegate responsibility for preventing and combating corruption to various institutions; others established specialized agencies mandated to both prevent and investigate corruption; still others created centralized agencies that manage and coordinate anti-corruption activities (Lortkipanidze, 2014); since then, the establishment of anti-corruption agencies has become a global practice (Meagher, 2005). However, despite their differences, they perform similar functions: corruption prevention; education and awareness raising; investigating and prosecuting offenders; coordinating AC activities; and proposing AC policies. In line with these, the countries that established the minimum political, legal, and socio-economic conditions for effective governance have been successful (9th International Anti-Corruption Conference, 1999; Cardona, 2015; OECD, 2008).

In managing ethics and corrupt behaviors in an organization, both compliance-based and integrity-based approaches must be considered as two sides of the same coin (Cooper, 2012). Moreover, traditionally, ethics in public management has been divided into normative and structural perspectives. The normative perspective is concerned with instilling ethical values and implementing them in public organizations. While the structural perspective is concerned with regulatory and prescribed legal prohibitions in order to control administrators' behavior (Gilman & Lewis, 1996), in many countries, the preparation and adoption of ethical guidelines, employee codes of conduct, ethical principles, and value statements are becoming common (Pollitt, 2003). More importantly, anti-corruption regulation is taken as the central issue in public sector reform in the era of new public management (Christensen & Lægheid, 2011), and the reform involves *preventive and repressive* measures. The preventive one entails changing our way of thinking through ethics education and trainings (Veresha, 2018).

In this regard, it is impossible to exaggerate the role that colleges, universities, and other educational establishments play in discouraging and combating corruption. Establishing a culture of integrity and openness among students and staff is the first step towards promoting an ethos of accountability and honesty. That is why academic institutions should improve and successfully implement their anti-corruption policies, in addition to hosting frequent ethical lectures and information sessions for staff and students (Hauser, 2019).

Academic establishments are in a unique position to be vital in the fight against corruption. They not only train the next generation of leaders, but they also have a special chance to share the virtues of honesty and integrity by setting a high standard for accountability, transparency, and moral behavior. Academic institutions may significantly contribute to the development of an honest and open atmosphere that deters corruption and fosters stakeholder trust by making sure that all employees are held to these standards (Hauser, 2019).

By recognizing roles of the Universities in promoting ethics and fighting corruption, the commission argues that, Professional qualification on job place is not an adequate solution for productivity in both public and business institutions and organizations. The Leaders shall be ethical in workplace and able to deliver the required professional services. Employability rate in public or business institutions shall not undermine competency pillars such as personal behavior. Education sector assessment for professional qualification shall also promote the behavioral aspect of trainees. Without proper intervention to promote ethical standards in every aspect of human intervention, it's not easy to estimate the productivity of any entity, organization or institution. To be exact, the Global practice indicate that anticorruption actions such as education and training, prevention and law enforcement need comprehensive and integrated strategic interventions that promote knowledge, information and decision making processes in public and business sectors. Building ethics and integrity in public sectors can enhance sustainable solutions in anticorruption actions. Public and business leaders and employees shall improve their integrity against the conventional ethical standards. Partly, due to lack of proper education, training and awareness creation regarding ethics and integrity in public and business sectors, leaders and employees violate laws and standards of their institutions and organizations. In the cases of

weak institutions, in terms of transparency and accountability, unethical behavior of leaders and employees result in corrupt practices and conflict of interest that can damage public trust.

Therefore, the commission, with universities in Ethiopia, is planning to address the existing handicaps observed in ethical leader promotion and corruption prevention in both public and business institutions through formal training, education, and awareness-creation practices for all leaders and employees. Knowledge, skills, and experience of leaders and employees in both public and business institutions shall be promoted through continuous capacity-building actions, assessments, certifications, and licensing (The FEACC, Commissioner, 2023).

When we see the previous anti-corruption efforts in Ethiopia, the first corruption survey was conducted by Addis Ababa University in 2001. The survey report reveals that corruption was a major challenge in Ethiopia. Further, the research conducted by Transparency Ethiopia also supports the findings of the above survey, as corruption is the third major challenge in Ethiopia (Transparency Ethiopia, 2008). The Second Ethiopian Corruption Perception Survey, which was conducted by Kilimanjaro International Corporation Limited in 2011, reported that corruption in public organizations was the seventh most serious problem in the country (Kilimanjaro, 2011). Moreover, Transparency International's corruption perception index (CPI) in recent years ranked Ethiopia at a severe stage of corruption. Despite improvements in its ranks (TI). In the Ibrahim Index of African Governance, Ethiopia scored 48.5% (Ibrahim, 2013). This indicates that corruption is still a major challenge in Ethiopia. Moreover, the World Bank's survey also showed that corruption is among the three major challenges to running a business in Ethiopia (WB, 2010). Furthermore, the Joint Governance Assessment Measurement Program survey, which was conducted in 2014 on perceptions of the level of corruption by foreign investors in Ethiopia, reveals that corruption is a major constraint for investment in the country (Selam Development Consultants, 2014). Furthermore, according to the World Bank's Diagnostic Corruption Survey, which was conducted on eight public sectors, petty corruption is day-to-day practice in public sectors. and also conclude that corruption in the public sector is eroding public confidence in the government (Plummer, 2012). Furthermore, the Transparency International's Bribery Index report indicates that petty corruption threatens people's lives and good governance conditions in Ethiopia (TI, 2014). Moreover, Transparency International's Global Corruption Barometer survey report 2013, also reveals that 44% of respondents in Ethiopia who had encountered public services reported that, in order to get public services, paying bribes is a must (TI, 2013).

Therefore, the findings reveal that the previous efforts of Ethiopia's Federal Ethics and Anti-corruption Commission have been challenged for a long time for a variety of reasons, including: lack of cooperation with relevant bodies, insufficient resources, and an unclear mandate and functions to bring about the expected change in curbing corruption (Biruk, 2016; p.vii).

In this study, the knowledge gap was considered the missing piece in previous research. It is an area that has not been explored or is unexplored. This includes the scope, target population, research methods, data collection and analysis methods, and research themes. Therefore, the past research that was conducted on corruption and anti-corruption efforts in Ethiopia was mainly quantitative surveys, project-based, which conveyed the forms and levels of corruption and corruption situations by sectors. In this case, therefore, as far as I know, there has not been much research done in the areas of ethical leadership and anti-corruption training programs study as a corruption prevention tool.

### **The Objective of the Study**

The aim of this study was to assess the contents of Ethical Leadership and Anti-Corruption Training courses, including assessment, certification, and licensing. Further, the study aims to make appropriate recommendations on the design of ethical leadership and anti-corruption training, assessments, and certification programs that will be implemented by the Federal Ethics and Anti-Corruption Commission of Ethiopia (FEACC).

### **Research Questions**

1. What could be the contents/considered in designing the Ethical Leadership and Anti-corruption Training courses, Assessment, Certification and licensing program ?

### **Motivation for the Study**

This study was inspired by the need to promote ethical leadership, reduce corruption, and advance good governance in Ethiopia's public and business institutions through ethical leadership and anti-corruption training, leaders' competency assessment, certification, and licensing.

### **The Significance and Contribution of the Study**

The findings of this study are helpful in expanding the understanding and knowledge of corruption prevention through ethical leadership training and anti-corruption training, which resulted in the advancement of good governance in both public and business institutions. To be exact, the findings of this study are valuable for Ethiopia's anti-corruption efforts in advancing knowledge of ethical leadership and anti-corruption training approaches.

The findings of this study are significant to the anti-corruption agencies, especially those mandated to prevent corruption through the promotion of ethics and good governance, the government, and other stakeholders in the anti-corruption agenda.

### **Limitations of the Study**

We can't imagine quality research without some shortcomings; however, it needed to be addressed clearly and concisely for the readers. Thematically, this study narrowed to assess the experts' suggestions and experiences on the course contents of the ethical leadership and anti-corruption training program module content, leaders' ethics competency assessment and evaluation tools, and certification and licensing procedures. Methodologically and qualitatively, the sources of data for this study were purposefully selected experts (anti-corruption commissions and universities) through questionnaires, interviews, and FGD.

### **Literature Review**

This section reviews the literature that supports the study. It also contains the conceptual model developed by the researcher in order to show the alignment of the FEACC mandate and the university mandates intended to design the ethical leadership and anti-corruption training programs.

### **Ethics, Anti-corruption and Governance**

Scholars such as Johnston (2014) and Fritzen & Dobel (2018) argue that, in order to eradicate systematic (endemic) corruption effectively, transforming the governance system, shaping unclear anti-corruption policies, and establishing strong anti-corruption bodies are crucial preconditions. Moreover, previous research on the effectiveness of anti-corruption agencies in various countries reveals that legal "structures and institutional powers and authorities" are key to the success of anticorruption agencies. To put it differently, any attempt to cause behavioral changes by restructuring formal institutions cannot be successful unless it is accompanied by perceptual changes in individuals. "In this line of reasoning, how an anti-corruption agency is able to change individual perceptions is an important concern for a corruption study" (Choi, 2009). Furthermore, Stevulak & Brown (2011) describe an approach that encourages cultivating ethical behavior rather than penalizing wrongdoers in both public and private organizations. In this case, even though the integrity approach is widely accepted and advocated in regulating organizational ethics (Choi, 2009), methods, procedures, and instruments must be applied to control the unethical behavior of an organization's members (Tremblay, Martineau, & Pauchant, 2017).

According to the United Nations, the integrity approach builds accountability and good governance practices, which reduce the cost of public management (Stevulak & Brown, 2011). Moreover, the integrity approach is a long-term investment that can change organizational culture and positively reshape the relationship between citizens and public service delivery (OECD, 2000). Therefore, the integrity based approach has been recognized

and has attracted the attention of national as well as international organizations such as the UN, OECD, WB, and IT (Huberts, 2014). Thus, an integrity-based approach has changed public management orientation towards new thinking (Heywood, 2012). In the 1990s, compliance and integrity-based approaches were used together to curb corruption. This framework helps countries fight corruption in an effective way (Pope, 2000). Academicians and practitioners argue that balancing compliance and integrity approaches is a means to successful management ethics (Tremblay et al., 2017). More importantly, the National Integrity System (NIS) is built on the state's key factors, such as branches of government (legislative, executive, and judiciary), the media, private sector, and civil society (Pope & Vogl, 2000). The ethics infrastructure rests on management, guidance, and control, which contain various elements with specific functions (Bertók, 2005).

On the other hand, the compliance and integrity fused approaches framework has focused on the following: i) "Detection practices"; ii) "Normative practices" (policies and standard procedures); iii) "Structural practices" (offices and personnel); iv) "Social and environmental responsibility practices" (community involvement, environmental responsibility); v) "Consultation and participation practices" (employee involvement in ethical initiatives, dialogue); and vi) experiential ethical development practices (artistic training, mind-body approaches, spiritual practices). (Tremblay et al., 2017). To be exact, in fighting corruption, different countries and institutions have standard procedures, laws, and other legal documents with oversight agencies. Such an approach will not be effective in combating corruption unless ethical/moral governance is in place (Erakovich, Kavran, & Wyman, 2006). In other words, "institutionalization" of ethics as part of ethics management is crucial. Institutionalization of ethics is about enforcing and implementing ethics in the day-to-day functioning of public administration by adopting various instruments and managing ethics both in formal and informal ways.

Therefore, countries have introduced rules and codes of conduct in recent decades to clarify standards and values in order to prevent corruption and unethical behavior. Still, the code of ethics is important in public sector reform (Demmke & Moilanen, 2011). "Code of conduct" is defined by the International Federation of Accountants (2007) as "values, rules, standards, and principles that guide organizational procedures, decisions, and systems in order to ensure the rights of all citizens" (Disoloane, 2012, p.33). Public organizations' codes of ethics are designed for the following reasons: to provide a solution to an ethical problem; to educate about the mission of the organization; and to promote ethical sense in the organization (Grundstein-Amado, 2001). "A code of ethics is a statement of principles that describes desirable professional conduct and guides individuals in resolving ethical problems" (Grundstein-Amado, 2001). A code of ethics is crucial for the healthy functioning of all organizations, whether public or private. Moreover, according to Kinchin (2007), a "code of ethics" has the potential to be accountable in decision-making. However, efficiency would decrease if the factors related to ethics in public organizations were not taken into account. Codes are a powerful tool that promotes organizations' credibility and prestige in the eyes of the public (Bivins, 1993).

Managing corruption and unethical behavior is seen as having a structural and normative approach (Pugh, 1991). The structural approach is based on a formal legal prescription to manage and control behaviors, while the normative approach focuses on the development of ethical values in an organization (Erakovich et al., 2006). On the other hand, enacting clear behavioral standards consistent with social needs, accountability, operationalization of concepts, increased transparency, and due process. "Nowadays, we grow, live, and work in organizations. Therefore, organizations provide us with two essential modes of ethics management and control: normative and structural approaches, which should be complementary. Moreover, "the basis for a structural perspective is on external controls, including the codification of laws and regulations, and the basis for a normative perspective is on internal values of rightness and wrongness" (Erakovich et al., 2006, pp.1242-43). Both compliance-based and integrity-based approaches to ethics management are the most important strategies to control corruption.

Therefore, OECD countries identified key public service values that combine both new and traditional values such as legality, impartiality, transparency, integrity, equality, efficiency, justice, and responsibility. "Traditional values reflect the fundamental mission of the public service, while new values articulate the requirements of a new ethos" However, building an effective culture of ethics and public service values largely depends on the commitment and support of political leaders. Thus, intolerance of corruption and unethical behavior encourages ethical governance (Misra, 2016). Moreover, "community members share important and long-lasting beliefs, ideals, and principles about what is good and desirable and what is not." "pursue the public interest with accountability and transparency [democratic values]; serve professionally with competence,

efficiency, and objectivity [professional values]; act ethically to uphold public trust [ethical values]; and demonstrate respect, equity, and fairness in dealings with citizens and fellow public servants [human values]." (NASPAA, 2009,p.2). In this case, in an organizational context, ethical guidelines address a number of values such as accountability, excellence, respect, honesty, integrity, loyalty, fairness, and probity. Moreover, it also addresses professional values (efficiency, effectiveness, quality, service, and innovation), people-oriented values (humanity, caring, compassion, and tolerance), as well as democratic values (rule of law, responsiveness, representativeness, neutrality, and openness). (Kernaghan, 2003).

Scholars argue that even though many countries have established legal frameworks for addressing corruption and unethical problems, which range from constitutions to codes of conduct, moral value creation needs great attention for anticorruption regulation (Misra, 2016). Effective ways of controlling corruption are based on a sound policy that promotes ethical values; political support for moral and ethical values; making public service by using technology to reduce human interference; establishing a national integrity commission (agency); providing effective training to civil servants; and establishing a system that motivates honesty, among others. In addition, in the process of reducing corruption, countries enact various laws and ratify conventions, establish anti-corruption agencies, and work procedures. These efforts cannot produce the desired result unless they are supported by human commitment and ethical behavior (Misra, 2016). More importantly, organizational ethics is evolutionary and dynamic; it has been evolving and developing with the development of public administration and management (Hijal-Moghrabi & Sabharwal, 2018). While ethical problems and corruption are also changing with societal development and emerging technologies.

Furthermore, on a daily basis, ethics standards impact decision making, effectiveness, job satisfaction, and employee stress, and turn-over, but above all, employee commitment in an organization. Acceptable ethical standards are characterized by the smooth functioning of public administration. The political elite must support the design, implementation, and enforcement of ethics and anticorruption policies and regulations for ethics to be effective (Demmke & Moilanen, 2011). The code of ethics in public organizations directs the day-to-day lives of civil servants, promotes the independence of public officials, and professionalizes staff relationships if it is supported by ethics training and education (Misra, 2016). To be exact, the discourse relates ethical values to other people who are closely related to professional public services. Historically, the OECD has been at the forefront of promoting new public management in the public sector over the past two decades.

We also ask countries to recognize that the three "Es"—Effectiveness, efficiency, and economy—make no sense if public servants do not know what value they must achieve effectively and efficiently (Balia, Bertok, Turkama, Van Delden, & Lewis, 2007). In addition, UNCAC (2003) indicates that "the principles of proper management of public affairs and public property, fairness, responsibility, and equality before the law, and the need to safeguard the integrity and foster a culture of rejection of corruption" (UNCAC 2nd & Harutyunyan, 2003).

Therefore, trust in public organizations is strengthened through administrative rules, standards, laws, and regulations relating to the provision of services and information. Public bodies can increase this organizational trust by adopting new technologies such as government websites, suggesting that ICT-based public service delivery can be one of the institutional tools to strengthen trust in moral responsibility, make the process more transparent, and reduce the discretion of public officials (Welch, Hinnant, & Moon, 2005). The trustworthiness of government services emanates from ethical service delivery, competence, and providing quality service for citizens (Yao, 2014). Scholars argue that understanding public administrators as moral agents is important for at least three reasons. First, this view of public administrators began to shift focus away from traditional approaches to administrative ethics, which focused on laws and regulations, and toward ethics based on the inherently moral nature of public service. This shift is critical because, paradoxically, deep-rooted interpretations of administrative ethics contribute to the development of a culture of cynicism and suspicion rather than trustworthy and moral public services. Second, viewing administrators as moral agents allows us to consider administrative ethics as a subset of professional ethics and to consider important issues such as the moral obligations of governance experts. Finally, viewing public officials as moral agents promotes a better understanding of the substance and subtlety of trust in government (Garofalo, 2008).

Scholars recommended that "to translate core values into action, countries need to frame and construct standards of conduct and create environments where core values guide actions" (Erakovich et al., 2006, p.

1238–39). Better organizational performance is likely to ensure integrity, transparency, and accountability; enhance citizen satisfaction and participation; and strengthen the anti-corruption drive (Ashour, 2004). Moreover, to use rewarding ethical behavior as a mechanism to change the volume of unethical behavior and corruption, public organizations need to establish a strong and effective system to do so (Ibrahim, Ewere, & Adu, 2015). Nowadays, the pressure is on the government to use its power and resources properly. In this case, an integrity mechanism is needed to revise service standards, offer guidance, and enforce and monitor their day-to-day activities (Evans, 2012).

Furthermore, a public service dedicated to ethics and professionalism is more likely to achieve its ends if it has an ethical infrastructure. To increase professionalism, there must be a career system based on the principle of merit that allows the promotion and recruitment of civil servants in a fair and neutral manner. It is a clear law that delineates the legal rights and responsibilities of public servants (Saint-Martin & Thompson, 2006). Effective human resource policy is the one that articulates better civil service pay, enhances human resource capacity development, and incorporates disciplinary corrective measures. Through preventing, detecting, investigating, and prosecuting wrong-doers (unethical behavior), ethics can also be encouraged. (Armstrong, 2000). Even though different professions, for instance, lawyers, have differences in their legal systems, procedures, practices, and customs, they have one thing in common, and that is "standards," which focus on competence and integrity (Carr, 2005). Therefore, literature illustrates that civil servants are the drafters of a code of ethics as well as ethical principles (Gebre, 2016).

### **Anti-corruption Regulation and Ethical Governance**

According to the president of the Republic of Rwanda, "there can be no doubt that corruption is very costly to both governments and businesses and, as such, impacts negatively on our development efforts." Therefore, it makes economic sense and is good politics to fight corruption. "Equally not in doubt is the fact that the success of the fight against corruption depends on good governance" (GPAD, 2016, p. 4). Therefore, the OECD defines the term "governance" as the exercise of political authority and control in a society in relation to managing its resources for economic and social development (OECD, 1995). Governance as a broad term encompasses the way states function, structural and institutional arrangements, decision-making procedures, policy-making, implementation capacity, information flow, leadership effectiveness, and the nature of the relationship between the rulers and the ruled. Therefore, governance affects not only the integrity, efficiency, and profitability of the state but also its effectiveness in meeting the needs toward which the organization and activities of the state are oriented (Misra, 2003). The design of the governance system is also an important aspect. Creating a network of people with distributed power, decision-making, and information flows creates a variety of independent channels of communication and supervision that facilitate localized decision-making, internal competition, and cross-checking in a well-designed system. The reliability of the information needed for management and governance purposes flows through the organization (Renn, 2009).

On the other hand, the UNDP policy document defines governance as the exercise of political, economic, and administrative powers to regulate the affairs of a country. It includes the processes, mechanisms, and institutions that allow groups and individuals to express their well-being, exercise their rights, fulfill their obligations, and mediate their disagreements (UNDP, 1997). Therefore, improving the governance system's ethics, accountability, justice, and fairness is critical to the anti-corruption campaign. Moreover, in spite of rules and regulations in the governance system, the problem of corruption and unethical behavior cannot be resolved unless human commitment and good will, above all morality, are in place (Misra, 2016). According to Renn (2009), governance in general is a goal-oriented ethical concern that is management-focused. Therefore, corruption prevention is about all the features of good governance that are implemented in various agencies (OECD, 2008). Organizational culture is mainly shared beliefs and assumptions among constituents of the organization (Schein, 1985). Organizational culture is a normative construct of shared behavior guided by policies, procedures, and systems that guide the ethical actions and decisions of organizational members (Agarwal & Malloy, 1999). Moreover, the power of civil society is vital to the governance process. Thus, strong integrity policies both in normative and structural approaches are needed in order to put into practice the power of civil society in the process of fighting corruption (Bruce, 2001). To be exact, promoting integrity in public administration means applying norms, values, and ethical principles to the day-to-day operations of public service organizations in order to prevent unethical behavior and corruption. So, integrity is central to promoting

good governance (Evans, 2012). In this connection, in the last two decades, corruption and its control have become a central agenda item in the debate on good governance (Fritzen & Basu, 2011).

When the term "governance" is preceded with the connotation "good", some value-assumptions and attributes such as efficiency, accountability, transparency, participation, rule of law, justice, and control of corruption are added to it (Drake, Malik, Xu, & Kotsioni, 2003). The recent concern for good governance and building public confidence in the administration has resulted in the need to adhere to moral and ethical principles that emphasize "fairness," "conscience," and moral clarity, and they give the idea a prominent place by admitting that officials are ultimately accountable to the people. In an effort to preserve high standards of moral and ethical behavior by public administrations, government organizations rely on a number of enforcement mechanisms, such as legal regulations, professional rules, codes of ethics, and ombudsmen, to monitor ethical standards (Misra, 2016). Strengthening institutions to promote good governance is the best strategy to prevent corruption in the public sector. In other words, strengthening the governance system means straightening moral and ethical values. Institutions must be free of interference and have autonomy in order to function effectively (Misra, 2016; Huberts, 2018). Independence and autonomy are most important to anti-corruption agencies.

On the other hand, the term "integrity violation" broadly encompasses various corrupt practices such as improper use of power and official information for private gain; potential conflicts of interest; favoritism and bribing; and terrorization and discrimination. As a result, acts that violate ethical values and norms are considered integrity violations. Integrity is becoming the central topic in governance and public policy making. This idea is crucial in understanding government ethics and corruption (Huberts, 2018). Because Corruption involves misuse of power, nepotism, and favourism, which is against acceptable oral standards, norms, and values. Integrity identifies the acceptable standard of behavior from the opposite one. Therefore, the present position of multidisciplinary public governance studies warrants greater attention to "ethics and integrity" Moral values and norms are often lacking when academics describe, explain, and understand the reality of governance and administration. The predominant focus is on goals and interests; prejudice and irrationality; institutions; power and context. A change of ethics and integrity is required "in the prevailing fields of study." But also for integrity and ethics researchers, standard scientific articles should be the center of attention. Moral values and norms are assumed to play a significant role in day-to-day politics and administration, and researchers, in this sense, are part of the ethics industry (Huberts, 2018).

### **Ethical Leadership and Good Governance**

In the last couple of decades, anti-corruption campaigns and projects have comprised the elements of ethical Leadership and good governance by different organizations, ranging from international, national, and NGOs (Moroff & Schmidt-Pfister, 2010). Good governance and ethics policies share the following in common, i.e., fighting corruption, accountability and transparency, and participation of all stakeholders and citizens at large (Demmke & Moilanen, 2011). Therefore, organizations should focus on workplace policies that are intended to create employees who arrive on time day in and day out, do their job, work hard, strive to do the right thing, and often produce breakthroughs that promote the interests of the company (Renn, 2009). Good governance further involves processes, institutions, and effective mechanisms that serve the interests of citizens and ensure that citizens exercise their rights and obligations. In the process of governance, transparency, accountability, participation, and the rule of law are also essential for the governance system to be open and effective (Misra, 2016; Nabatchi, 2012).

More importantly, the phrase "good governance" is increasingly being used to call attention to the need for "governance" to operate according to the rule of law and, above all, in a corruption-free manner. Good governance is agreement-oriented, accountable, transparent, participatory, responsive, efficient, effective, fair, and inclusive, and it pursues the rule of law (Anello, 2008). Good governance is about enacting and implementing proper policies and procedures that guarantee ethical management as well as efficiency and effectiveness. More importantly, the goal of good governance is to minimize corruption by establishing an accountable and transparent system, sustaining the rule of law, and minimizing corruption (Anello, 2008). In other words, the art of "good governance" is to have adequate processes in place to prevent mistakes while promoting effective growth and innovation to realize the strategic goals of the organization. Procedures, processes, and rules are essential and valuable as long as they contribute to the general objectives described above. When rules start to undermine these goals, they quickly become obstacles to good governance (Renn,

2009). In this regard, Englebert (2002) defines good governance as a set of qualities including institutions, government accountability, and property rights stability free of corruption. When donors initiate the agenda of good governance, the aim is to place more focus on anti-corruption, accountability, and efficient governance (Randall & Theobald, 1998).

Good governance is characterized by the variables of governance such as "improving efficiency, effectiveness, and accountability of the public sector; political and economic stability; intolerance of corruption; peace and national unity; openness and transparency; law and order; the rule of law; respect for human rights and civil liberties; political rights and freedom of association; multi-partyism; citizen participation in the process of governance; free and fair elections; and press or media freedom" (Maserumule & Gutto, 2008, p.83). On the contrary, corruption occurs when public servants and political elites deviate from ethical norms and values to achieve personal ends (Haque & Mohammad, 2013). The World Bank also defines corruption as the abuse of public office for private gain (WB, 1997). In this connection, corruption is the unlawful and improper enrichment of oneself by using public authority (Haque & Mohammad, 2013). Therefore, according to Kim (2008), public sector corruption is mostly related to a lack of good governance practices such as accountability, transparency, responsiveness, and participation. Transparency and accountability are strongly linked in the process of fighting corruption, with the internalization of values in an open government system (Lyrio, Lunkes, and Taliani, 2018). In this case, the OECD is playing a role in promoting an ethical public sector by providing guidance and advice for its members (OECD et al., 2000).

There has been much debate on good governance and integrity in relation to corruption and ethics. With advancements in technology, the concepts of governance and ethics are involved in the realm of digital ethics. There is also much to be said about digital governance, and even more to understand and theorize, but one thing is clear: digital governance is digital ethics, also known as information, computer, or data ethics (Floridi & Taddeo, 2016). The practice of developing and implementing policies, procedures, and standards for the proper development, use, and management of the information sphere is known as "digital governance" (Milakovich, 2012). It is also a matter of convention and good coordination, which are not always moral or immoral, legal or illegal. For example, through digital governance, a government agency or a company can (a) determine and control the processes and methods used by data stewards and custodians to improve the data quality, reliability, access, security, and availability of its services and (b) design effective decision-making and accountability procedures for data-related processes. (Florida, 2018). Furthermore, "digital governance" includes specific guidelines and recommendations for digital regulation. Furthermore, digital regulation includes a system of rules and legislation that apply and are elaborated and implemented through social or government institutions to regulate the behavior of related agents in the info-sphere. And compliance is an important link through which "digital regulation" shapes "digital governance" (Floridi, 2018). Digital ethics, as a branch of "ethics", studies and assesses moral issues related to data and information (including its generation, capture, preservation, processing, dissemination, sharing, and use), algorithms (including artificial intelligence, artificial assets, machine learning, and robots), and associated practices and infrastructure (including responsible innovation, hacking, programming, and professional codes and standards) to formulate and support morally sound solutions (e.g., good behavior or good values). Therefore, "digital ethics shapes digital regulation and digital governance through the relationship of moral evaluation" (Floridi, 2018, pp. 1–7).

### **Anti-corruption Agencies Mandate**

Countries all over the world are adapting to various institutional models of AC agencies. So far, the United Nations Convention against Corruption (UNCAC) has not recognized the best model. Most countries, particularly those that have ratified or signed the United Nations Convention Against Corruption, have four dominant AC institutional models in place (UNDP,2005).The preventive model, the law enforcement model, the multipurpose model, and the coordination model are among them (Transparency International Georgia, 2014). Even though the countries adapt different institutional models for their own, they have the following functions in common: (i) supervision and coordination; (ii) knowledge creation; and (iii) research development of policy proposals, education, and awareness-raising, as well as corruption investigation and prosecution (Cardona, 2015). To regulate corruption, this common function employs both a value-based and a compliance-based approach. More importantly, these functions are defined in this dissertation as anti-corruption regulations. In this regard, the important point in an institutional arrangement is choosing the type of agency that is intended to be established with the appropriate legal framework and resources needed, and so forth. Indeed, the



government's efforts to strengthen this agency's capacity are critical to its effectiveness (UNDP, 2005). For example, the multi-purpose agency model is also known as the single agency approach. Their functions are both preventive and repressive. In this context, this agency also provides technical assistance on corruption prevention, including policy analysis and policy development on anti-corruption programs. In this model, most of the time, the corruption prosecution wing is separately established. The Singapore Corrupt Practices Investigation Bureau and the Hong Kong Independent Commission against Corruption are very popular examples of such a model.

Corruption prevention is about all the features of good governance that are implemented in various agencies. UNCAC identifies the preventive functions of anticorruption agencies as: the declaration of assets; the prevention of conflict of interest; the prevention of money laundering; the ethics and transparency of public service; and financial control over the use of public funds (OECD, 2008). Moreover, anti-corruption work is executed by many at varying levels without establishing ACAs; in this regard, international, national, and regional organizations, including NGOs, have been created, as have ministerial structures, to overcome the problem of ethics. All of them agree on the importance of an anti-corruption system for development that is democratic (Lewis & Gilman, 2005b) and that requires prevention and integrity programs. UNCAC 2003 articulates "the principles of proper management of public affairs and public property, fairness, responsibility, and equality before the law, and the need to safeguard the integrity of government and foster a culture of rejection of corruption" (UNCAC, 2003, p. 6).

Establishing independent anti-corruption bodies that attain the role of leadership by setting standards and scrutinizing performance has become an important feature of this decade (Head, 2012). Moreover, preventive anti-corruption agencies or specialized integrity agencies best perform in an environment in which transparency and accountability systems are adequately incorporated and the political elites are committed to these values. To be exact, over the last two decades, corruption and its control have become a central agenda item in the debate on good governance (Fritzen & Basu, 2011). Corruption control needs a specialized body that monitors and implements anti-corruption legislation. This body in different countries is supported and facilitated by international organizations such as the Council of Europe, the Organization for Economic Cooperation and Development, and the United Nations (OECD, 2008).

However, the effectiveness of anti-corruption agencies (ACAs) in controlling corruption is controversial (Fritzen & Basu, 2011). Some studies support the idea that institutionally strong anti-corruption agencies (ACAs) give way to positive short-term as well as long-term achievements in fighting corruption (Charron, 2008). Other views: the lack of coherent strategy, political commitment, institutional cooperation and coordination, and organizational independence of anti-corruption agencies (ACAs) is widely regarded as the root cause of their failure to carry out their mandate and remain merely paper tigers (Heilbrunn, 2004). Scholars suggest many conditions that can help anti-corruption agencies improve their performance. Citizen pressure for change (Pope & Vogl, 2000); "complementary" right-to-know measures" (Florini, 2007); and adequate resources, including human resources. (Meagher, 2004). On the other hand, the success of the strong single-agency approach by the anticorruption agencies of Hong Kong and Singapore has been a model for many countries around the world. Countries, in response to corruption and unethical behavior, establish anti-corruption agencies in different forms (models). others' strengths and develop the capacity of existing institutions (Meagher, 2005). For instance, the Office of Ombudsman of Rwanda established an anti-corruption body with a traditional ombudsman office, whose principal responsibility is to safeguard people against governmental rights violations, abuse of authority, mistakes, carelessness, biased judgments, and poor administration in line with fighting corruption (OOR, 2014). (OOR, 2014).

Anti-corruption organizations around the world share some universal functions to combat corruption and unethical behavior. These are: investigative, prosecutorial, and preventive efforts; as well as raising awareness and disseminating education about ethics and corruption; and coordinating anti-corruption activities and policies (9th International Anti-Corruption Conference, 1999). Most importantly, several international and regional conventions, such as the United Nations Convention against Corruption (UNCAC), the African Union Convention on Preventing and Combating Corruption (AUCPCC), and the Council of Europe Criminal Law Convention on Corruption, have laid the groundwork for the establishment of specialized anti-corruption agencies in the countries that have ratified the conventions (OCED). However, UNCAC has no prescribed

model for member countries around the world to create and reform anti-corruption agencies. As a result, anti-corruption organizations have taken a variety of approaches (Heilbrunn, 2004).

### **Corruption Prevention Mandate**

Anti-corruption prevention entails a detailed assessment of different segments of the administration, such as the procurement agency, corruption risk evaluation, and administrative procedure assessment. Moreover, the prevention of corruption includes ethics education, awareness-raising, and forming partnerships with various organizations (Cardona, 2015). In its preventive mandate, the Federal Ethics and Anti-corruption Commission of Ethiopia is mandated to study government organizations' operating procedures and the risks of corruption in prone areas such as tax authority, procurement agencies, and land administration, to name a few. The commission also plays an advisory role in different sectors and conducts training for different bodies. More importantly, corruption prevention aims to improve accountability, transparency, and effectiveness in the public sector. In other words, how reform is implemented in an effective way (UNDP, 2011).

### **The Significance of Anti-Corruption Education at Academic Institutions**

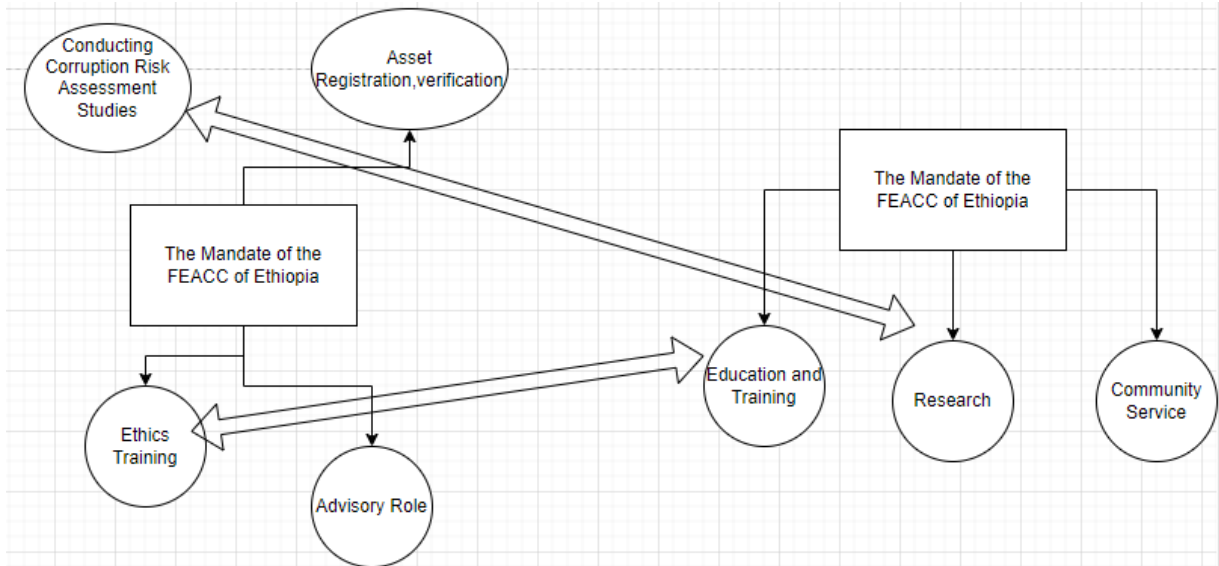
One of the best strategies to raise public awareness and change attitudes about corruption is through anti-corruption education. The fact that most individuals are ignorant of corruption's definition and the detrimental effects it can have on society is one of the primary causes of its widespread prevalence. We may contribute to the development of a more knowledgeable and anti-corruption society by teaching people about the origins, effects, and possible countermeasures to corruption (Swanda & Nadiroh, 2018).

One of the most effective strategies to fight corruption is education. It may contribute to the development of a more knowledgeable and anti-corruption society by educating students on the origins, effects, and possible remedies for corruption. A complicated problem, corruption has an impact on every aspect of society, including politics, business, and law enforcement. To build a more informed public, it is crucial that we educate individuals and groups from all areas. Education, especially for young people, is crucial in curbing corruption. Because, they are vulnerable to corruption once they enter the workforce. Educating them about corruption hazards and resisting coercion can help them make better decisions later at work place and personal life. (Dewantara, Hermawan, Yunus, Prasetyo, Efriani, Arifiyanti, & Nurgiansah, 2021).

Therefore, the term "anti-corruption" primarily refers to institutional and social interventions that work to limit the opportunities for corrupt practices and elevate corruption to a high-risk endeavor by enacting laws, rules, and policies that control public and private officials as well as the general public and foster accountability and transparency. This include identifying, detecting, and removing the factors that contribute to corruption and unethical behavior as well as discouraging any actions that are connected to corruption or other unethical behavior that could lead to corruption (Manuhwa & Stansbury, 2016).

Anti-corruption agencies are particularly responsible for coordinating and implementing national anti-corruption strategies in collaboration with various bodies, to be exact, anti-corruption bodies need to be collaborate in the areas of ethical leadership training, competency assessment, and certification.

### **The Conceptual Model of the Study**



**Figure.1** The figure shows that, the mandate given to the FEACC and the Universities are complementary by its nature, both of them conducting training on the areas of ethical leadership and anti-corruption.

### Research Methodology

Expert interviews are the most influential source of empirical data. The nature of interviewing also permits interviewers to search for their themes, thus moving beyond written versions that may often only stand for an official account of events to collect data (information) about the underlying context and construct events that took place (Tansey, 2007). Expert interviews also compensate for the constraints that may be observed in the documentary sources of evidence and/or, further, if documentary evidence doesn't exist at all. On the other hand, some confidential documents may not be available to the public. In this regard, expert interviews may display the evidence in the document that is not accessible due to its nature (Davies, 2001). In addition, expert interviews provide first-hand information from the respondents, who directly take part in the issue. For this reason, documents and other sources of information obviously can't substitute for the information gathered from elites through interviews (Tansey, 2007).

More importantly, Litkowski (1991) stated the critical issue that needs to be addressed in connection with the expert interview as follows: according to him, "no instrument is perfect." It is generally useful to seek outside commentary on our approach. We seek expert review on assignments using structured interviews to help us determine whether: 1. the questions being asked and the manner in which they are asked are adequate to answer the overall question posed in the evaluation; 2. the intended interviewee group will have the knowledge to answer the questions; and 3. the instrument is as well constructed as possible within state-of-the-art confines. In many instances, officials from the agency whose programme is under review serve in this capacity. By obtaining agency input at this stage, we avoid potential problems after data collection, when time and money have already been spent. In other cases, staff in other design, methodology, and technical assistance groups or staff or individuals with subject-area or evaluation expertise can provide expert review. In particular, subject-matter experts in membership associations who provide us with lists of the respondent universe or sample can provide expert review. People providing expert review are not acting as interviewees. They do not answer the questions but instead provide a critique (Litkowski, 1991).

The methodology included an examination of current offerings, meetings with key stakeholders through in-depth personal and group interviews, as well as focus group sessions. The participants included federal and regional anti-corruption experts working in the areas of ethics training, corruption risk assessment studies, and training program relevance monitoring desks, as well as university lectures from the faculty of policy studies, leadership and governance, the ethics and integrity study center, and the faculty of curriculum study. The expert

team is composed of twenty individuals. Many of them have experience in the areas of module development and curriculum design; ethics and integrity training; policy advice; and leadership development research.

Initially, the Expert Team was assigned to prepare a concept note for ethical leadership and anti-corruption training program design. Therefore, the research for this study used a pre-established team of experts in order to collect data through interviews and focus group discussions, and a structured questionnaire was also developed for the purpose. Additionally, the raw data that was collected from the expert team on the ethical leadership and anti-corruption training program module is expected to be designed for all leaders of public and business institutions.

## Result and Discussion

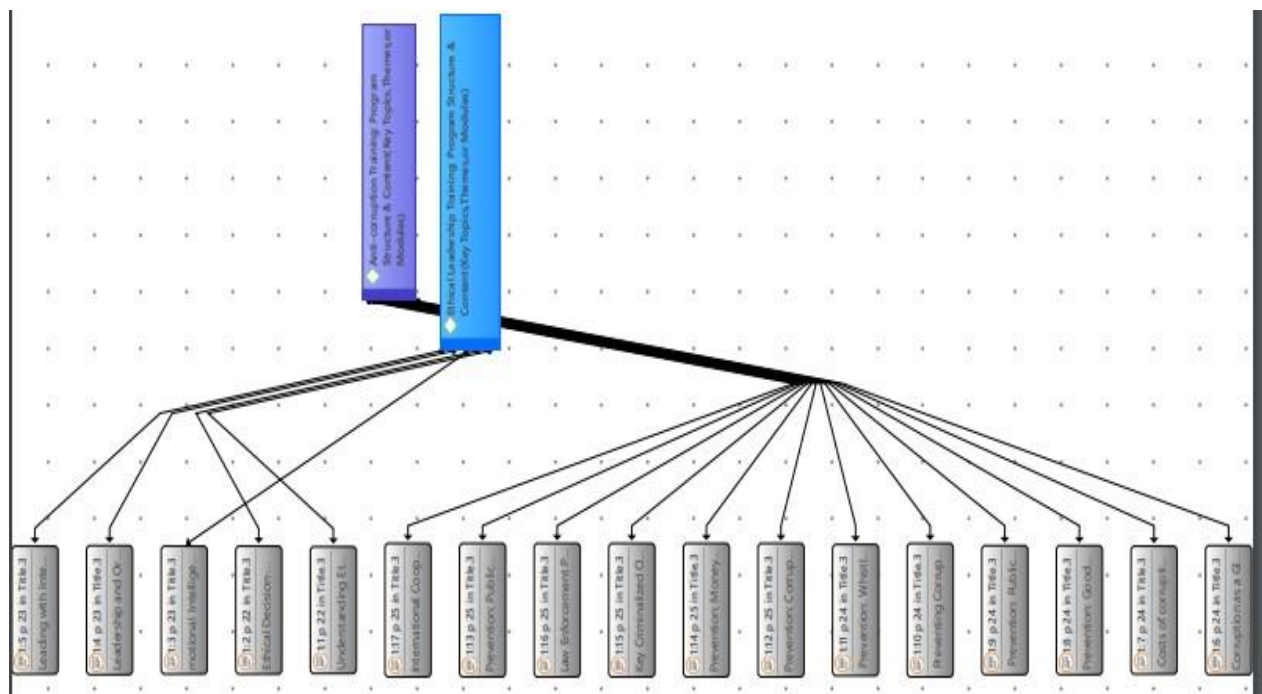
This section aims to discuss the results that were obtained from the study. The discussion is done as per the research objectives. The objective of this study was to assess the contents of ethical leadership and anti-corruption training courses, including assessment, certification, and licensing.

What could be the contents/considered in designing the Ethical Leadership and Anti-corruption Training courses, Assessment, Certification and licensing program ?

The findings of this study were based on experts' interviews, FGD experts from regional and federal ethics and anti-corruption commissions in Ethiopia, and lecturers from first-generation universities in Ethiopia. This study was collected from the perspectives of experts on the intended ethical leadership training, assessments, certification, and licensing.

*The major findings of the assessment addressed include:*

- The Ethical Leadership and Anti-corruption Training Program Structure & Content
- Trainee Evaluation and Assessment:
- The Leaders Certification and Licensing



## **Ethical Leadership Training: Program Structure & Content**

### **Key Topics, Themes, or Modules:**

The Ethical Leadership training program covers a range of key topics and themes. Some of the key modules or topics covered in the program may include:

**Module One: Understanding Ethical Leadership:** Exploring the Principles, Theories, and Models of Ethical Leadership, including the Role of Values, Integrity, and Character in Effective Leadership **Module Two: Ethical Decision-Making:** Examining frameworks and approaches for making ethical decisions, including analyzing ethical dilemmas, considering stakeholder perspectives, and balancing competing interests. **Module Three: Building Ethical Cultures:** Exploring Strategies to Foster Ethical Cultures Within Organizations, including Promoting Transparency, Accountability, and Ethical Behavior at All Levels **Module Four: Communication and Influencing Skills:** Developing effective communication and influencing skills to inspire and motivate others, build trust, and facilitate ethical decision-making and collaboration. **Module Five: Emotional Intelligence and Self-Awareness:** Enhancing self-awareness and emotional intelligence to understand one's own values, biases, and ethical strengths and weaknesses and to navigate ethical challenges. **Module Six: Leadership and Organizational Ethics:** Examining the intersection of leadership and organizational ethics, including the role of leaders in shaping ethical climate, managing ethical risks, and promoting social responsibility. **Module Seven: Leading with Integrity:** Exploring the importance of personal integrity, authenticity, and ethical leadership in building trust, credibility, and long-term success.

The team of experts suggested that leadership theories, concepts, and practical skills be integrated into the program's content to provide a comprehensive learning experience. The content may include: a) **Theoretical Foundations:** Introduction to various leadership theories and concepts, such as transformational leadership, servant leadership, ethical leadership frameworks, and moral reasoning models. b) **Case Studies and Best Practices:** Analysis of real-life case studies and best practices from different industries and sectors, highlighting ethical leadership successes and challenges. c) **Interactive Workshops and Exercises:** engaging workshops and exercises to develop practical leadership skills, such as ethical decision-making simulations, role-playing scenarios, and group discussions. d) **Self-Reflection and Assessments:** Opportunities for self-reflection, self-assessments, and feedback to enhance participants' self-awareness, value alignment, and ethical leadership development. e) **Guest Speakers and Industry Insights:** Inviting guest speakers, industry leaders, and subject matter experts to share their experiences, insights, and practical wisdom in ethical leadership. f) **Action Learning Projects:** encouraging participants to apply their learning through action learning projects, where they can address real-world ethical challenges within their organizations or communities.

Furthermore, the team of experts also elaborated that the program may also incorporate innovative or specialized components to enhance the learning experience and provide a unique value proposition. Some examples include: a) **Ethical Leadership Labs:** hands-on experiential learning activities or labs that allow participants to explore ethical leadership in practice, engage in ethical decision-making simulations, and analyze the impact of their choices. b) **Technology-enabled learning:** leveraging technology platforms for virtual learning, online modules, webinars, and interactive discussions to accommodate remote or distributed participants. c) **Cross-Sector Collaboration:** encouraging participants from different sectors to collaborate, exchange perspectives, and learn from diverse ethical leadership practices across industries. d) **Ethical Leadership Coaching:** Offering personalized coaching sessions to participants, providing individualized support and guidance in their ethical leadership development journeys. e) **Integration of Ethical Dilemmas:** Incorporating ethical dilemmas and challenging scenarios into the program to stimulate critical thinking, ethical reasoning, and decision-making skills.

These innovative and specialized components enhance the program's effectiveness in developing ethical leaders by providing interactive, practical, and cutting-edge learning opportunities that go beyond traditional classroom instruction.

### **Anti-corruption Training: Program Structure & Content:**

The team of experts also discussed in detail the anti-corruption training program. The program covers a range of key topics and themes essential for corruption prevention. Some of the key modules or topics covered in the program may include:

**Module One: Corruption as a Global Risk: Causes, Forms, and Costs:** Introduction to corruption Forms and types of corruption, their causes, and their impact at varying levels. The emphasis is on the national context.

**Module Two:** Costs of corruption in general and in Ethiopia in particular: The issues to be demonstrated in the specific case of the country (Ethiopia)

**Module Three:** Prevention: Good Governance and the Rule of Law In this module, the issues discussed in detail include: the issue of good governance, transparency, accountability, the rule of law, the leadership code of conduct, bureaucratic reform, and the conflict of interest (CoI) in the public and private sectors.

**Module Four:** Prevention: Public Participation, Open Government, and Education: The issues discussed in detail include the public feedback system (public monitoring and reporting procedures), the citizen's right to information, the transparency of public resources (government budgeting and expenditure and auditing), corruption prevention and detection strategies, and open public debate on the performance of the government.

**Module Five:** Preventing Corruption in the Private Sector: The issues discussed in detail include foreign bribery, asset recovery, money laundering, criminal liability for false financial disclosure, business sector accounting and auditing procedures, and national and international cooperation in fighting corruption.

**Module Six: Prevention: Whistleblowing and the Role of the Media in Reporting Corruption:** Transparent decision-making; access to information; whistleblowing and anti-corruption reporting protection; civil society participation; and justice systems with integrity Some of the main issues and topics include: a) Promoting open and anonymous internal and external whistleblowing. b) Promoting incentives for reporting on corruption and whistleblowers, witnesses, experts, and victims in the public and private sectors, including protection. c) Protecting the right to seek, receive, publish, and disseminate corruption information.

**Module Seven: Prevention: Corruption in Justice, Prosecutorial, and Anti-Corruption Institutions:** The issues to be discussed include judicial and police corruption, the independence of judicial and law enforcement bodies, and the transparency and accountability of the justice sector.

**Module Eight:** Prevention: Public Procurement and Financial Management: The issues include public and business sector financial and procurement corruption, promoting transparency and accountability in procurement and financial management through the application of e-service procedures, and auditing.

**Module Nine: Prevention: Money Laundering: The issues addressed in this topic include: preventing money** laundering; money laundering and corruption; and FIU's and suspicious transactions.

**Module Ten: Key Criminalized Offenses and Enforcement: The issues covered in this topic include public** and business sector bribery, illicit enrichment, embezzlement, and judicial and police sector integrity.

**Module Eleven: UNCAC Law Enforcement Provisions and Human Rights: The issues covered include** protection for whistleblowers, the victim's corruption, corruption reporting persons and witnesses, defense lawyers, courts, investigative journalists, and bloggers.

**Module Twelve: International Cooperation and Mutual Legal Assistance the issues covered include national, regional, and international** cooperation, collaboration, and information exchange.

### **Evaluation and Assessment: Ethical Leadership and Anti-corruption Training**

#### **Methods: Assessing Leaders Progress and Learning Outcomes:**

The Ethical Leadership and Anti-Corruption Training Program employs various methods to assess leaders' progress and learning outcomes. These may include:

- a) **Pre- and Post-Assessments:** administering pre-program assessments to establish baseline knowledge and skills, followed by post-program assessments to measure participants' growth and development in ethical leadership.
- b) **Case Study Analysis:** assigning case studies or ethical dilemmas for participants to analyze and apply their learning, assessing their ability to apply ethical frameworks and make informed decisions.
- c) **Reflective Assignments:** requiring participants to submit reflective assignments or journals that capture their personal growth, insights gained, and application of ethical leadership principles in their professional settings.
- d) **Group Projects or Presentations:** Engaging participants in group projects or presentations that demonstrate their ability to collaborate, apply ethical leadership principles, and communicate effectively.
- e) **Skills Demonstrations:** conducting skills demonstrations or simulations where participants showcase their ethical decision-making skills, communication abilities, and leadership competencies.
- f) **Peer and Self-Assessments:** Incorporating peer and self-assessments to encourage participants to evaluate their own growth, provide feedback to their peers, and engage in self-reflection.

#### **Incorporation of Feedback and Evaluation:**

Continuous feedback and evaluation are integral parts of the Ethical Leadership and Anti-corruption Training program to ensure its effectiveness and address participants' needs. The program incorporates feedback and evaluation in the following ways:

- a) **Facilitator Feedback:** Facilitators provide ongoing feedback and guidance to participants during workshops, exercises, and discussions, helping them identify areas for improvement and providing suggestions for growth.
- b) **Participant Feedback:** Regular feedback sessions are conducted to gather participants' input on program content, delivery, and relevance, allowing for iterative improvements based on their suggestions.
- c) **Evaluation Surveys:** Participants are requested to complete evaluation surveys at key points throughout the program, assessing their satisfaction, perceived impact, and suggestions for program enhancements.
- d) **Peer Feedback:** Incorporating structured opportunities for participants to provide constructive feedback to their peers, fostering a culture of mutual learning, growth, and accountability.
- e) **Individual Coaching or Mentoring:** Offering individual coaching or mentoring sessions where participants receive personalized feedback, guidance, and support in their ethical leadership development journey.

#### **Post-Program Follow-up and Support:**

To ensure the sustainability of learning and its long-term impact, the program includes post-program follow-up and support initiatives, such as:

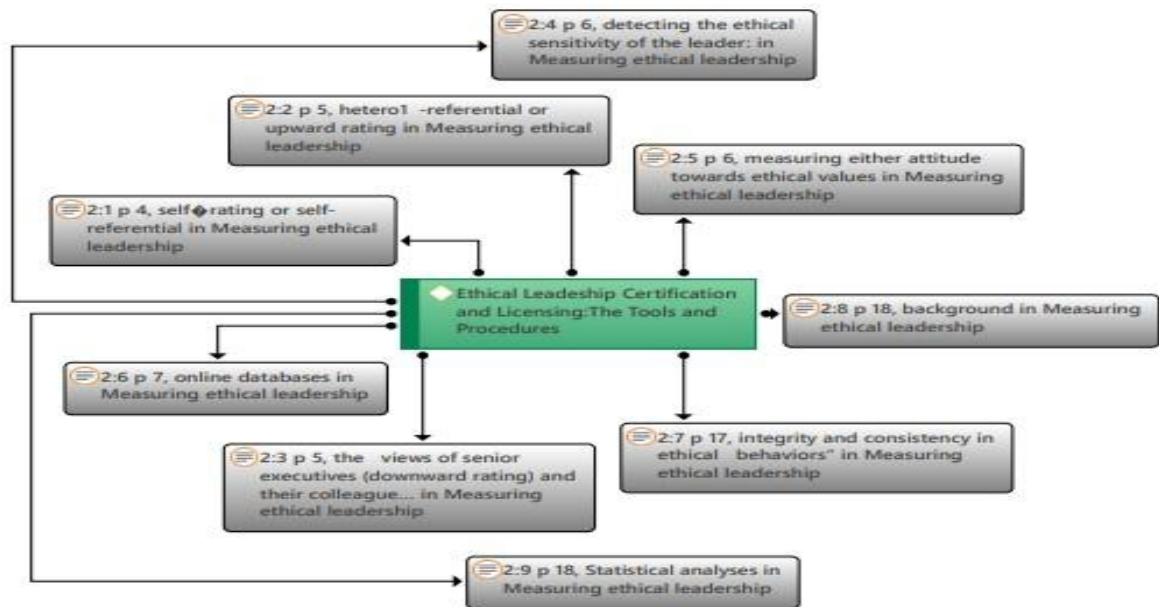
- a) **Alumni Network:** Establishing an alumni network or community where participants can continue to engage with one another, share experiences, seek advice, and access additional resources related to ethical leadership.
- b) **Ongoing Resources:** Providing access to post-program resources, such as articles, webinars, or online communities, that offer continuous learning opportunities and updates on emerging ethical leadership practices.
- c) **Coaching or Mentoring Opportunities:** Offering optional coaching or mentoring sessions to participants after the program, providing ongoing support, accountability, and guidance in applying ethical leadership principles.
- d) **Action Learning Projects:** Encouraging participants to continue working on their action learning projects beyond the program's duration, with periodic check-ins and support from program facilitators or mentors.
- e) **Performance Monitoring:** Collaborating with participants' organizations to establish mechanisms for monitoring their application of ethical leadership principles and measuring their impact on organizational culture and outcomes.

By incorporating post-program follow-up and support, the program aims to reinforce the leaders' learning, foster a community of practice, and ensure the sustained application of ethical leadership principles in their professional roles.

## Ethical Leadership Certification and Licensing

The leadership competency certification and licensing program is designed for public and business institution leaders with the aspiration to advance and promote ethics and integrity in both public and private institutions and anti-corruption. In doing so, the carefully designed and objective standards are at the heart of this program.

In this study, the experts suggested nine basic tools for measuring ethical leaders' ethics competency in order to award certificates and license them. These include: a) detecting the ethical sensitivity of the leaders. b) Referential or upward rating, measuring attitude towards ethical values. d) Background and present ethical performance studies. e) Using online databases for information such as public feedback. f) Measuring integrity and consistency in ethical behavior. g) Collecting the views of senior executives, subordinates, and colleagues. h) Analyzing statistical information. i) Self-assessment, self-rating, or self-referential.



- ❖ Finally, in this case, the experts critically commented that, the Ethical Leadership Promotion in Public Sectors and Business Institutions need to be supported by legislative framework. Since, the ethics assessment, certification, licensing and renewal procedures linked to the actual results registered to the public offices and business institutions in ethics promotion and corruption reduction, that will be approved latter by the corruption risk assessment study's findings. In addition, the ethics assessment, certification, licensing and renewal procedures need to effectively communicated to the public. Consequently, the role media must be taken into consideration.

## Conclusions and Recommendations

This section presents the study's conclusions and recommendations. The study concludes that the ethical leadership and anti-corruption training program, assessment, certification, and licensing procedures are very crucial in promoting ethics in an organization and preventing corruption. There is currently a need for training and development to foster an ethical leadership style at the institution. The analysis of the findings shows that the team of experts suggested various topics, themes, or modules for ethical leadership and anti-corruption training programs that will be administered by both the federal ethics and anti-corruption commission of Ethiopia and the selected universities of Ethiopia. However, for more than two decades, the FEACC of Ethiopia has been conducting a wide variety of trainings for various institutions and individuals for the last twenty years and above. Recently, the commission re-considered its internal organizational structures. Thus, the ethics and corruption prevention training department or section was organized, and the training module was also prepared with training quality and relevant evaluation protocols. However, in this study, the experts suggested an ethical



leadership and anti-corruption training for leaders that is very different from the existing module in terms of its scope, coverage, and themes. In addition, the experts also considered the leadership assessment and evaluation, certification, and licensing procedures, that is, the latter used as a criterion for the government in leadership appointments, hiring, firing, and promotion of employees. Moreover, every year or in a specified time period, public and business leaders and employees shall meet the required ethical standards to get jobs and claim employment returns.

The suggested training modules cover very wide areas of ethics promotion in an organization and corruption prevention with varying approaches.

### **Limitations and Recommendations for Future Research**

The aim of this study was limited to assessing the course contents of an ethical leadership and anti-corruption training program designed for leaders of public and business institutions. The sources of data for this study were purposefully selected experts (anti-corruption commissions and universities) through questionnaires, interviews, and FGD. From the study findings, the following recommendations were made:

The key findings of this study recommend that the federal ethics and anti-corruption commission of Ethiopia, in collaboration with universities, expand the existing ethics and anti-corruption training program by focusing on ethical leadership and an anti-corruption training program as per the suggestion of the research.

The commission should also consider both the promotion of ethics and the identified themes in designing the intended ethical leadership training program.

Based on this initial expert suggestion, the commission should conduct further studies in detail on the training program, leaders ethical leadership evaluation, certification, and licensing, as well as the assessment and evaluation tools and methods and certification and licensing procedures.

Finally, in this study, the ethical leadership trainings for emerging leaders, middle-level leaders, and senior leaders were not considered, and the issues considered in the FEACC and the university collaborations were not considered in this research.

Further research will be needed on the training methodology, approach, and content design for emerging leaders, middle-level leaders, and top leaders. In addition, the specific standard for leader competency assessment, evaluation, and certification needs to be considered in order to scale up this initial study.

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# **A Study of Marketing Problems and Solution for Paddy Cultivation in Jaffna.**

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## Abstract

Rice is the major crop for most of the farmers in Sri Lanka. Paddy cultivation contributes around 1.5 per cent to the Gross Domestic Product of the country. Although Sri Lanka achieves self-sufficiency in rice production, farmers are unable to achieve good profit out of their business. This is due the fact that the cost of production for rice is significantly increasing with government subsidies on fertilizers. The current cost of production of rough rice is Rs. 8.57 per kg. The cost of labor, farm power and tradable inputs constitutes 55 per cent, 23 per cent and 23 per cent respectively (Department of Agriculture). Sri Lanka is also unable to find foreign market for its rice. The government policy related to paddy production and marketing are unfavorable, that is the government does not purchase the whole paddy produced in the area on a guaranteed price in a regular manner. And also some time although purchasing as in regular manner, farmer cannot get actual price of their products. Due to the low price during the harvesting time it is important that paddy should be stored. Most of the paddy stores were destroyed during the war time in the area and some of the rest of the stores are available, however they have not enough space. They are unable to sell their paddy as soon as after harvesting due to lack of distribution channel. The physical objective of distribution channel includes transport and storage facilities, those are also in very poor level in this division. Although the farmers in research area have ordinary education level, they don't have enough knowledge related to marketing. Therefore, the ultimate purpose of study is to find out causes for these problems and propose the remedies and strategies to improve the paddy marketing.

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## Introduction

Rice is cultivated in 34 per cent of total cultivated areas in Sri Lanka. 560,000 hectares are cultivated in maha seasons and 310,000 ha are cultivated during yala seasons. In the country, 1.8 million farmer families are engaged in paddy farming (Department of Agriculture). Although Sri Lanka achieves self-sufficiency in rice production, farmers are unable to achieve good profit out of their business. This is due the fact that the cost of production for rice is significantly increasing with government subsidies on fertilizers.

## Problem Identification

The paddy cultivation is the livelihood of the Jaffna. Even though they could produce the expected harvest they faced difficulties in marketing their harvested paddy. Through this study by identifying the problems relating to marketing their output, we can find the solution. Hence by developing strategies for the effective marketing of paddy, the farmers will be able to have reasonable price for their paddy, and can be able to reduce the waste and evaporation and also the problem of capital dumping can be eliminated. As a result of that the social, economic stability and regional development can be improved. Through the area development the Gross Domestic product and economic development of the country can be progressed. The Jaffna farmers are facing many problems; the major problem of this is they are unable to sell their cultivation for high price. Hence the economic, social, & cultural welfare of the families have been affected due to above problem. This situation urges the need for finding reason for such marketing problem; which is the main core of the research study.

## Objectives of the research

To identify the factors which affect the paddy marketing in Jaffna.  
To find out the factors that will promote the marketing the paddy.  
To develop strategies for effective marketing.

## **Research Questions**

What are the factors which disturb the paddy marketing in Jaffna?

What are the factors that will promote the paddy marketing?

What strategies are effective for paddy marketing?

## **Literature Review**

Today's farmers face a growing range of problem in paddy cultivation they can market. This is study of how farmers create and improve their marketing opportunities. This study only consider problem in paddy cultivation. It includes government policy, facilities, Distribution Channel and marketing knowledge. In my conceptualization diagram it is clearly understood the marketing problem depend on the government policy, facilities, Distribution channel and marketing knowledge. These four gathered to effect on marketing problem in paddy cultivation. With this can analyze how to improve the marketing opportunities. Agriculture product marketing is very vital in the country because this sector contributes about 20% of the gross domestic product. In early 1980s about 40% of the workers engaged in the Agriculture. (Central Bank of Sri Lanka, 2018) Agriculture commodity production is dominated by smallholders and most of the production units are less than one hectare. Therefore, all the agricultural and pricing policies have been focused on this sector to achieve, the self-sufficiency, food security, enhancement of rural income, generation employment opportunity and protection of consumer welfare. Selection of appropriate media is a difficult task but there are many sources of data which document characteristics of the audience reached by a given medium. If market segments are properly defined and classified, it is possible to select media which reach the desired target audience. The objective is to minimize waste coverage so far as possible. (Tonny proctar,2016) Distribution channel as one of the functions of marketing and as part of the total marketing bill. At the point, we want to talk about distribution in the management context, in terms of channels of distribution. As seen by managers, channels of distribution are system composed of institutions and resources that managers utilize to move products from farmers to consumers. Agribusiness managers at all levels- farmers, processors, wholesalers, and retailers- use channels of distribution.

## **Method of Data Collection and Measures**

A questionnaire consists of set of questions presented to a respondent for their answers. Under this study questionnaires were issued to farmers in a random basis. The respondents will be told that real purpose of the study and their information will be collected from their own words. The data collected from the 200 respondents were analyzed in connection with personal information for research information. This research study has been conducted by researcher in Jaffna.

## **Sample size and Sampling method**

Two hundred customers were taken as sample for this study. A sampling is the collection of samples from the population in the area where the research were studies. From the researcher's point of view, population includes farmers. To evaluate problems on paddy marketing, sample is collected from population of Jaffna. To make the selection effective, sample is collected through simple random sampling method.

## **Data Analysis**

The Government Policy subscale consisted of 6 items (Cronbach's Alpha = 0.824), The Facilities subscale consisted of 7 items (Cronbach's Alpha = 0.789), Distribution Channel subscale consisted of 5 items (Cronbach's Alpha = 0.757), Marketing Knowledge subscale consisted of 6 items (Cronbach's Alpha = 0.712), Effectiveness of Marketing subscale consisted of 7 items (Cronbach's Alpha = 0.773). The government policy was found to be highly reliable (6 items: Cronbach's Alpha = 0.824). Government Policy and Effectiveness of Marketing were significantly correlated,  $r = 0.513$ ,  $p=0.01$ . Facilities and Effectiveness of Marketing were significantly correlated,  $r = 0.563$ ,  $p=0.01$ . Distribution channel and Effectiveness of Marketing were significantly correlated,  $r = 0.562$ ,  $p=0.01$ . Marketing knowledge and Effectiveness of Marketing were significantly correlated,  $r = 0.648$ ,  $p=0.01$ . Multiple regression analysis was used to test if the government



policy, facilities, Distribution channel, marketing knowledge significantly predicted participant's ratings of Effectiveness of Marketing. The results of the regression indicated the four predictors explained 48.4% of the variance ( $R^2 = 49$ ,  $F(47.689) = 4.453$ ,  $p < 0.01$ ). It was found that Government Policy, facilities, Distribution channel, Marketing knowledge significantly predicted Effectiveness of Marketing ( $B = 0.103, 0.185, 0.072, 0.401$ ,  $P < 0.01$ ) as did Effectiveness of Marketing ( $B = 0.972$ ,  $p < 0.01$ ).

### **Conclusion and Recommendation**

The government policy related to paddy production and marketing are unfavorable, that is the government does not purchase the whole paddy produced in the area on a guaranteed price in a regular manner. Due to absence suitable policy related to paddy production and marketing of government they should arrange or make suitable situation to transport and sell their paddy without depending the government, and also they should attempt or try to get suitable guaranteed price from the government for their products purchased by the government as well as attempt should be made to get the advantages from the economic status of country forward them. Several facilities should be required to paddy production and marketing such as storage, loan facilities or credit facilities and row material. Due to the low price during the harvesting time it is important that paddy should be stored. Most of the paddy stores were destroyed during the war time in the area and some of the rest of the stores are available, however they have not enough space. The government should make arrangement in enough storage facilities to store their products for a larger period of time or the government should make arrangement for storage facilities through the private sector or individuals, and also government should help to farmer to get row material (seeds, fertilizer and chemicals) on a suitable low price, which can be conducted through the Non-Government Organization. Distribution Channel means the distance from the producer to consumer of the product. The quality of paddy is also affected or low because the unfavorable climate condition during the harvesting time which cause problem in marketing. Due to the all roads were damaged in research area, it should be reconstructed and repaired to solve the problem in transportation. The unfavorable activities of intermediaries and mill owners should be limited, because the impression of them will cause situation to sell the products in lower price. Marketing knowledge means the knowledge beyond from normal knowledge. Although the farmers in research area have ordinary education level, they don't have enough knowledge related to marketing, and also they don't know about changes on price of their products by the changes in the products, as well as they don't consider quality of their products. The local market cannot be used marketing because the most of people in the area paddy farmers, and also it is difficult to marketing the products in district level because of excess paddy production.

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# Theoretical Insights on the Latest Update of Integrated Reporting Framework: Value Creation, Preservation or Erosion?

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## Abstract

**Purpose:** There is a renewed interest towards Integrated Reporting (IR) based on the recent developments in the IFRS Foundation and Sustainability Standards from June 2023. The rationale behind IR is to disclose information on integrated strategy and value creation activities. Therefore, the purpose of this paper is to understand the theoretical frameworks of Integrated Reporting, in light of the emphasis laid by the 2021 update of IR framework on value creation, preservation and erosion.

**Design/methodology/approach:** This paper uses the bibliometric data analytics method to identify relevant peer-reviewed journal articles based on ERA and UGC quality lists. Then, it adopts the narrative/discursive style as per de Villiers et al. (2017) and the methodology of Camilleri (2018) with a review of pertinent theories in Integrated Reporting.

**Key Findings:** This paper contributes to existing literature on the latest developments on Integrated Reporting Framework. The findings suggest that the public interest theory was the initial theory for developing and updating the IR framework. Voluntary adoption of IR is currently mostly used as a signalling mechanism with voluntary disclosures. The integrated disclosures, if audited, are nevertheless helping to improve the legitimacy and signalling effect of firms, thereby trending towards the value creation and preservation aspect.

**Research limitations/implications:** The paper has pointed out the inherent theoretical limitations that the IR framework face. Nevertheless, even with its imperfections, this study asserts that the updated IR framework is a source of support for organisations and an effective voluntary use of IR might result in less myopic behaviour of management.

**Practical implications:** This research has evaluated IR based on theoretical frameworks. It has pointed out that the voluntary disclosures of information may be beneficial with Integrated Reporting if it relates to quality and not quantity. Thus, there is still a risk of focussing on ticking checkboxes instead of improving the quality of voluntary disclosures.

**Originality/value:** This paper contributes to two research gaps in literature. First, it critically analysed key theoretical underpinnings with the latest developments in the principles-based bodies for the IR framework. Second, this is the only study as per the authors' knowledge that simultaneously interact with both the theories of Integrated Reporting combined with data analytics.

**Keywords:** Sustainability Reporting, Signalling Theory, Legitimacy Theory, Voluntary Disclosure Theory, Public Interest Theory

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## Introduction

Five years have elapsed since the publication of Camilleri (2018) on theoretical exploration of Integrated Reporting. It is observed that, within the scope of this study, certain theories were omitted despite their examination in literature. The momentum has been boosted towards Sustainability and Integrated Reporting, especially, since June 2023, the International Sustainability Standards Board (ISSB), a recent organisation under the IFRS Foundation, issued IFRS S1 and IFRS S2 on disclosure of sustainability related financial information and climate change. The International Financial Reporting Standards (IFRS) Foundation is presently the principles-based accounting global body overseeing the International Accounting Standards Board (IASB) which sets the financial reporting standards (IFRS) and would contemporarily also oversee the ISSB for the

sustainability standards (IFRS Foundation, 2023). With regards to Integrated Reporting, a new Value Reporting Foundation has been created which acts under the IFRS Foundation, showing the global effect of Integrated Reporting, which is now an official IFRS Foundation related reporting framework (IFRS Foundation, 2022). Such consolidation has seen the clear efforts of harmonisation of several bodies, especially the International Accounting Standards Board (IASB) and the ISSB to provide guidance on the alignment of corporate reporting and non-financial sustainable reporting (IFRS Foundation, 2023). Harmonisation efforts have been seen by the Value Reporting Foundation (VRF) to include the Sustainability Accounting Standards Board (SASB), initially created in USA (IIRC, 2021a). These changes which happened a few months ago will undoubtedly have an impact on the market and stakeholders.

Given the dynamic changes brought to the reporting bodies, Camilleri (2018) could not have explained all the theories applicable, thus the author explained only a few of the theories applied in Integrated Reporting. However, these theories provide a limited view on the whole concept, given the nature of Integrated Thinking and Reporting, additional theories have been added in this study. Additionally, this is the only study to analyse the theoretical insights of Integrated Reporting Framework following the update of the framework.

### **Research Questions**

Integrated Reporting (IR) has become increasingly prevalent as organisations aim to address the diverse interests of stakeholders and demonstrate a commitment to sustainable business practices (IIRC, 2021a; Landau et al., 2020). In investigating the alignment of organisational practices related to integrated reporting with various theoretical backgrounds, this research seeks to understand the motivations and implications underlying this reporting approach. By analysing the connections of several theories, the aim to clarify the multi-layered dynamics influencing stakeholder perceptions in the context of integrated reporting. Camilleri (2018) investigated the agency, legitimacy, stewardship and institutional theories related to IR. This paper includes additional pertinent theories. Thus, the research question, RQ1, is: “How do Integrated Reporting practices align with organisational and societal theories?”. The second research question, RQ2, is based on the follow-up of the first research question. RQ2 would thus help identify the current relevant IR theories assessed by academics based on data analytics. Thus, RQ2 is: “What are the current organisational theories applied to Integrated Reporting?”

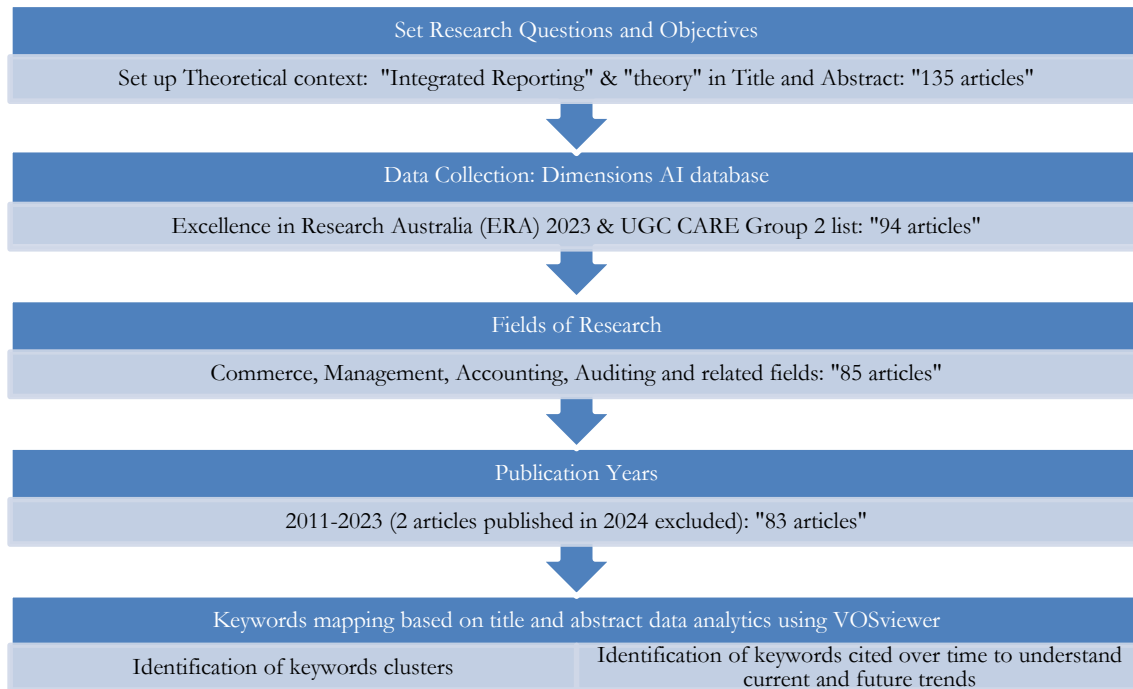
Organisations that disclose non-financial information frequently do so with the primary objective of maximising their financial capital and increasing profitability, according to literature which in other terms mean the profit maximising objective (Edmans, 2023). This is in line with several conceptual theories that are discussed in academic literature and several of which try to give an explanation for why integrated reporting should be adopted voluntarily (Camilleri, 2018). Thus, several theories seek to explain the reporting process with the main issue at hand.

### **Methodology**

The Dimensions AI scholar website is used as the source for the data collection (Dimensions, 2023). Existing literature supports a high degree of alignment between the Dimensions database and Scopus, with a reported match rate of 97%. This indicates substantial equivalence in bibliometric, citation, and meta-analysis or systematic literature review analyses based on the database, suggesting the potential suitability of the Dimensions AI as a valuable alternative to Scopus (Thelwall, 2018). In addition, the journal article had to meet the list of the Excellence in Research Australia (ERA) 2023 list or the Indian University Grants Commission (UGC) CARE List Group 2 with selection of only peer reviewed articles. The ERA 2023 is a framework designed to assess and identify quality journals in Australia. Researchers utilise the ERA 2023 to ascertain the acceptability of journals by Australian authorities, thereby aiding in the informed selection of reputable journals (Gu and Blackmore, 2017). During the ERA preliminary phases, the journal list primarily comprised Scopus-indexed articles. Subsequently, the committee enlarged the selection by incorporating additional journals following a comprehensive assessment. The search criteria in Dimensions AI scholar included “Integrated Reporting” and “theory” in inverted commas in title and abstract only. In order to filter out irrelevant fields, only the related fields such as Accounting, Auditing, Commerce and Management were selected. The sample size ultimately was 83 journal articles published between 2011 to 2023 and downloaded in January 2024.

Figure 1 delineates the data collection adapted from the PRISMA methodological framework, explaining a sequential depiction of the research methodology employed in conducting this study on theoretical insights. The examination of article keywords necessitates the extraction of textual characters from the title and abstracts of the sampled articles. This procedure enables a comprehensive understanding of the scholarly interests, facilitating an exploration of the paradigm evolution towards emerging conceptual and theoretical models.

Figure 1: Data Collection Methodology



Source: Developed by the Authors and adapted from the PRISMA model

## Results and Discussion

### The Stakeholder Theory and Socio-Political Theory

Stakeholders in a firm include shareholders, clients, personnel, suppliers, loan providers, regulators, tax authorities, and the community (Fernando and Lawrence, 2014). Successful firms effectively manage relationships with numerous stakeholders through stakeholder management. In the context of integrated reporting, it is imperative to enhance the emphasis on the significance of stakeholder management in ensuring the sustained viability of a firm (de Villiers *et al.*, 2017).

The IIRC (2013, 2021b) introduced guidelines in 2013 and updated them in 2021 for organisations to adopt a principles-based approach in reporting on integrated strategy, governance, performance, and opportunities for value creation. The 2013 framework emphasized assessing the quality of relationships with key stakeholders, while the 2021 update highlights methodological considerations and the dual aspects of value preservation and erosion. This highlights the theoretical merit of Integrated Reporting, acknowledging its potential benefits (de Villiers *et al.*, 2017; Camilleri, 2018; Dragomir and Dumitru, 2023).

The ethical branch theory, a subfield of the stakeholder theory, has been employed in studies on the subject to show how integrated reporting may provide vital social and ethical information for assessing economic value (Pavlopoulos *et al.*, 2019). Another component of the stakeholder theory, the management branch hypothesis, states that businesses would make an effort to cater to the stakeholders who have the greatest influence

(Conway, 2019). Given that stakeholders encompass various social and political actors, it is imperative to acknowledge the significant influence of socio-political theory as delineated in Haji and Anifowose (2016).

### **The Notion of Legitimate Existence**

Legitimacy theory holds that there is an unwritten social contract between a company and the community in which it operates (Camilleri, 2018; Chouaibi *et al.*, 2022). The legitimacy hypothesis states that a corporation must uphold its legitimacy in order to succeed, meaning that it would falter if it violated the social contract (Setia *et al.*, 2015).

Efforts to promote transparency, including integrated reporting, help to bridge gaps in legitimacy (Velte and Stawinoga, 2016). It is crucial to remember that the concept of legitimacy is dynamic; a corporation may experience a legitimacy gap at any point throughout its operations as a result of shifting the types of activities it conducts or unfavourable incidents that take place in its surroundings (Cooray *et al.*, 2020). Businesses are becoming more transparent as a result of social and environmental concerns (de Villiers *et al.*, 2017). Businesses have an obligation to provide more information after a disaster to win back the trust of their clients. According to Velte and Stawinoga (2016), integrated reporting may therefore be able to assist businesses in upholding their reputation.

While legitimacy theory positions that organisations strive to maintain their perceived legitimacy in the eyes of stakeholders and the general public (Setia *et al.*, 2015), concerns for IR continue to exist. According to the theory of legitimacy, purposeful manipulation of materiality analysis could result in the report's content being defined in a way that ignores the concerns of legitimate stakeholder groups. As a result, for the aforementioned stakeholder groups, this misuse does not improve the reports' relevance and efficacy (Beske *et al.*, 2020).

### **Institutional Theory and Diffusion of Innovation Theory**

Institutional theory demonstrate the mechanisms through which businesses commit to similar disclosure processes and achieve standardisation (Fuhrmann, 2019). This concept links the legitimacy theory and stakeholder theory, adjusting to shifting social issues (Briem and Wald, 2018).

Isomorphism and decoupling are two main components that compose institutional theory (Sun, Ip, *et al.*, 2022). The pursuit of legitimacy through institutionalisation, marked by complex stakeholder mandates, is illustrative of both institutionalism and neo-institutionalism (Alvesson and Spicer, 2018). In accordance with isomorphism, voluntary adoption of integrated reporting by select companies within a nation may prompt a subsequent mandatory adherence by other firms, driven by the imperative to uphold their social standing (Fuhrmann, 2019; Martínez-Ferrero and García-Sánchez, 2017)

Coercive isomorphism is typically prompted by regulators, using compliance and surveillance (Martínez-Ferrero and García-Sánchez, 2017). Mimetic isomorphism occurs when companies emulate their rivals, not under external pressures but with the aim of obtaining competitive advantages (Vaz *et al.*, 2016). The organization preserves its reputation by embodying innovativeness, aligning this approach with the diffusion of innovation theory for Integrated Reporting, potentially prompting smaller enterprises to emulate for comparable advantages. (Okotorina *et al.*, 2021; Vaz *et al.*, 2016). Diffusion of innovation theory originating from the field of communication studies, thus endeavours to explain the implementation patterns of innovative practices such as IR within organisations (Briem and Wald, 2018). Normative isomorphism obliges businesses to adopt institutional practices rooted in societal norms and expertise from relevant subject matter authorities (Martínez-Ferrero and García-Sánchez, 2017).

“Decoupling” occurs when a firm's disclosures deviate from its actions (Fernando and Lawrence, 2014). The idea that voluntary disclosures of positive information can create a divergent image from actual performance is captured in the concept of decoupling (García-Sánchez *et al.*, 2022). This phenomenon may clarify the emphasis on positive news in integrated reports by certain firms, concurrently minimizing the inclusion of negative news, thus helping explain impression management theory below.

## **The Agency Theory & the Stewardship Theory**

Shareholders, as principals, delegate authority to managers as agents to oversee daily business operations with the expectation that the latter will prioritize the principal's best interests. Agency issues arise when managerial actions prioritize self-interest over the principal's best interests (de Villiers *et al.*, 2017). The difference between ownership and control confers management an informational advantage over shareholders (Cooray *et al.*, 2020).

The integration of ethics into agency theory yields the stewardship theory. The latter challenges the premise that agents exclusively act in self-interest, attributing their behaviour to ethical considerations in relation to the principal (Camilleri, 2018). Thus, stewardship theory explains that ethically sound managers would safeguard and maintain the assets of the company as far as possible to the best interests of the shareholders.

Management typically has a broader information base rather than shareholders as the former are involved in day-to-day transactions of a business. This presents with the issue of information asymmetry as management would have a higher degree of insider information. Mandatory or voluntary corporate IR disclosures may reduce information imbalances, otherwise known as information asymmetry, thereby improving the decision-making process of stakeholders (Garanina and Dumay, 2017; Garcia-Sanchez *et al.*, 2020).

The stewardship theory, agency theory and information asymmetry could be associated to a few firm characteristics. The type of ownership also influences the quality of Integrated Reporting (Raimo *et al.*, 2020). A positive association exists between the overall effectiveness of the audit committee function and the extent and quality of IR practice, showing effective control in agency issues (Ahmed Haji and Anifowose, 2016).

## **The Voluntary Disclosure Theory and the Impression Management Theory**

The essence of the voluntary disclosure theory in IR is axed on distinguishing between the disclosure of positive and negative information in Integrated Reports (Nishitani *et al.*, 2021). The voluntary IR disclosures have the potential to improve the market value of a firm (Wahl *et al.*, 2020). Voluntarily disclosures result in cost savings for authorities, provide stakeholders with vital information and may serve as a strategic mechanism, showing perceived advantages stemming from economic and social considerations (Velte and Stawinoga, 2016).

Voluntary disclosures have been criticised because firms reveal only favourable information that may increase their stock price which has been associated with impression management theory (Casonato *et al.*, 2019; Roman *et al.*, 2019). Impression management thus involves the opportunistic administration of narrative disclosures. Given the voluntary nature of Integrated Reporting as outlined in the IIRC Framework and emphasized in IR newsletters, organisations possess discretion in determining the content and extent of disclosures, unless regulatory frameworks within a specific country mandate specific reporting requirements (IIRC, 2017).

Irrespective of the nature of disclosed information, both mandatory and voluntary disclosures serve as mechanisms through which a company can legitimise its operations. This holds true regardless of whether the disclosures are obligatory. Integrated reports, in particular, may incorporate information capable of positively influencing the perspectives of stakeholders (Melloni *et al.*, 2017). Roman *et al.* (2019) thus conclude that younger firms tend to use more optimistic tone when reporting on events in their integrated reports compared to matured organisations.

## **The Signalling Theory**

Information asymmetry is frequently explained within the signalling theory, particularly in the areas of corporate governance, entrepreneurship, and interdisciplinary research, tracing its origins back to the initial exploration of signalling theory in the labour market (Spence, 1973; Garcia-Sanchez *et al.*, 2020). The concept of signalling pertains to behaviour in situations where two parties possess disparate levels of knowledge. The signaller conveys information regarding a company's status, while the recipient of the signal, whether a stakeholder with or without technical expertise, interprets information pertaining to the firm's quality (Grassmann *et al.*, 2021). This signal offers additional or new data for the receiver or decoder.

Capital markets effects research highlight the significance of signalling theory. This theory posits that firms convey positive signals by communicating value-generating information within Integrated Reports (Fuhrmann, 2019; Grassmann *et al.*, 2021). This is consistent with firm disclosures that suggest stronger performance and market value (Hsiao and Kelly, 2018). Hence, integrated reporting disclosures are signalling mechanisms as per the IR framework.

Moreover, beyond enhancing performance and market value, the entity signalling also divulges information, mitigating information asymmetry and thereby signalling positively to the recipient (Buallay *et al.*, 2020; Camodeca *et al.*, 2019). Moreover, signalling theory mitigates agency issues as mentioned by Van Zijl *et al.* (2017) where the integrated reporting mechanism decreases adverse selection and information asymmetry. Sun *et al.* (2022) also associate integrated voluntary disclosures with organisational success. This opinion is shared with Barth *et al.* (2017) who observed a positive signal between an increase in IR quality with the market value of a firm.

### **Resource Dependency Theory and the Public Interest Theory**

Resource Dependency Theory aligns with the conceptualisation of IR. According to this theory, multiple capitals, as explained by the IIRC framework, correlates with the concept that resources exercise an influence on the operations of a company. These capitals as per IIRC (2013, 2021b) include the financial, intellectual, human, manufactured, social, relationship, and natural capitals, especially considering the environmental, social, and governance resources as per Velte and Stawinoga (2016). This integration is founded on the recognition that a firm's competitive advantages and strategy are shaped by a diverse array of capitals. Additionally, IR seeks to attain the objective of long-term value creation presenting the means by which the organisation can ensure the sustained provision of resources necessary for achieving above-average earnings (Dumay *et al.*, 2019; Makri *et al.*, 2023).

The principles of resource dependence theory support the objectives of IR, substantiating the theory's assertion that a company's principal function lies in securing essential resources (Qaderi *et al.*, 2022). This congruence emphasises how the goals of IR and the tenets of resource dependence theory are mutually beneficial. In this regard, IR offers a holistic perspective of an organisation's value creation, making it a strategic tool. In order to appeal to a variety of stakeholders and diminish dependence on certain resource providers, firms provide a picture of their financial and ESG performance. Thus, IR turns into an instrument for communicating resource dependencies and improving an organisation's appeal to investors, clients, and other important stakeholders (Dumay *et al.*, 2019; Makri *et al.*, 2023).

In order to communicate resource dependencies, manage externalities, minimise dead-weight costs and reduce agency conflicts, the public interest theory if applied correctly improves transparency (Leuz, 2010). Consequently, the public interest theory serves as a guiding framework for the regulatory system, enforcing transparency regulations to align business practices with broader societal objectives (Christensen *et al.*, 2017). Soh *et al.* (2015) associates the efforts to initiative develop the IR Framework stems from the public interest theory.

The public interest hypothesis is tied to the implementation of reporting systems, whether informally or through legislative frameworks. Private and public regulators, endowed with investigative and enforcement powers, operate with a shared emphasis on close supervision to ensure alignment with the public interest (Leuz, 2010). The public interest argument reinforces mandatory disclosure laws, asserting that government intervention is essential to address market failures effectively. This acknowledges the need for continuous oversight to ensure regulatory actions genuinely align with the broader public interest (Christensen *et al.*, 2017).

The public interest hypothesis asserts the efficacy of transparency-enforcing laws. Challenges arise when authorities yield to external pressures, irrespective of their public or private nature. Regulatory decisions are susceptible to political objectives, given the inherently political nature of the decision-making process. Thus, it is essential that political objectives are minimised and regulatory choices align with the broader goals of the public interest theory (Christensen *et al.*, 2017; Leuz, 2010). However, as Soh *et al.* (2015) notes that over time private interests appeared to precede over the public interest theory in the case of IR.





behaviour of management, through the multi-approach of theories. Consequently, this research critically evaluates IR through the lens of various theoretical frameworks, emphasising the potential advantages of voluntary information disclosure within an Integrated Reporting framework. It highlights the significance of prioritising the quality of disclosures over their sheer quantity to steer clear of a compliance-centric approach or a box ticking approach. Subsequently, there persists a risk of overemphasising procedural adherence at the expense of enhancing the functional and practical value of voluntary disclosures.

## Conclusion

The world is witnessing considerable changes in terms of non-financial reporting, with the advent of several bodies harmonising efforts towards sustainability and integrated reporting. The ISSB has issued IFRS S1 and IFRS S2 in June 2023 which would significantly impact on newer research. Furthermore, the Integrated Reporting Framework has been consolidated under the IFRS Foundation together with the SASB to become the Value Reporting Foundation. Thus, the renewed interest in Integrated Reporting has been geared towards the theoretical frameworks in this study to critically analyse the theories applied since the inception of Integrated Reporting, noting the significance of signalling, legitimacy and institutional theories. Furthermore, the same theoretical framework has been utilised to critically assess Integrated Reporting as a corporate communication channel, observing the agency theory and impression management theory have been instrumental in recent literature. Noting the inherent limitations of Integrated Reporting, especially with respect to the private interest theory instead of the public interest theory as well as the issue of impression management could open up several avenues of future research.

## Acknowledgements

The authors declare that they do not have any potential conflict of interest. They have not been supported by third parties.

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# **Morphological Transformation and Emerging Mixed Use Built Forms in Town, Ethiopia, the Case of Gombora Corridor.**

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## **Abstract**

Towns and cities are constantly changing and rearranging their diverse components, whether naturally formed or deliberately designed in response to socio-economic and political conditions. Hosanna, a large town in the Central Ethiopia Region, is one of the oldest secondary towns. Over time, Hosanna has grown to be more than four times the size it was in the 1990s. Throughout history, different parts of Hosanna have undergone morphological and functional transformations to accommodate changing economic needs, socio-cultural values, and spatial conditions. The planned residential areas have been particularly affected by this process. This transformation has also impacted the physical attributes of the urban form, resulting in incremental changes in plot configuration and built forms with increased density and intensity. The Gombora residential area as case study area has experienced significant transformation, especially along the corridor. The restructuring and intensification of land use along this road have created complex dynamics in the study area. Therefore, the objective of this study is to analyze the characteristics and processes of morphological transformation and the emerging residential built forms in the Gombora corridor. To achieve this objective, a case study strategy was employed, as it is best suited for descriptive and explanatory analysis. Out of the 291 plots along the corridor, 58 plots were selected for analysis of the morphological transformation, with 25% of these plots randomly selected for in-depth case studies. In general, the study used quantitative and qualitative methods to examine the extent and depth of the challenges. The findings indicate that the fundamental physical elements of urban morphology in the Gombora corridor are continuously affected by this transformation process. Furthermore, this transformation has led to the concentration of various functional activities along this route, enhancing the importance of this area and transforming the economic base. The unique pattern of morphological transformation observed along the Gombora corridor is evidenced by the emergence of a commercial sub-center in this area. Finally, the study provides recommendations for future urban planning.

**Keywords:** urban morphology, Commercial-area, transformation, Built-form. Hossana, Gombora corridor

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## **Introduction**

### **Background**

Cities and towns are constantly evolving, as they consist of various local activities at different scales. This leads to changes and growth. The growth of towns can be seen as the result of two interconnected processes: formal planning and urban design, and independent developer actions. The morphology of a town is determined by allowing variation and competition from numerous influences. While cities typically have a formal or informal pattern of initial settlement, change is always inevitable. In many developing countries, rapid population growth and economic change, including globalization, have accelerated the process of urbanization. Africa, in particular, has a low level of urbanization compared to developed continents like Europe and North America. However, it is projected that by 2030, about half of the African population will be concentrated in urban areas. Cities offer a wide range of advantages, such as work opportunities, educational facilities, better health services, improved living conditions, and increased financial capability, which have always attracted people to urban areas.

Ethiopia, with a population of over 120 million, is one of the least urbanized countries in the world. Currently, only 25% of the population is urban. However, it is expected that Ethiopia's urban population will triple over

the next two decades, with a rapid annual growth rate of more than 5%. As a result, the urban population is predicted to increase by an average of 3.98% over the next forty years, and the percentage of people living in urban areas is expected to rise to 42.1% by 2050. In recent years, Hossana has experienced a higher rate of growth due to rural-to-urban migration and other factors. In a decade, the population of Hossana doubled, going from 69,959 people in 2006 to 133,764 in 2015. The population density of Hossana town in 2014/15 was estimated to be 3,305.3 inhabitants per square kilometer, higher than the national capital with a population density of 2,655 inhabitants per square kilometer.

Furthermore, the town of Hosanna has undergone significant structural changes and rapid development over the past 15 years. It is in a constant state of flux, continuously unfolding and differentiating. This is influenced by significant demographic changes, as well as economic, social, and technological modernization, resulting in a rapid and dramatic transformation of the urban fabric. Therefore, planning must be an ongoing process to ensure the continuity of the urban fabric under changing conditions. Additionally, conducting research and having a comprehensive understanding of towns as dynamic entities is crucial for effective planning proposals.

### **Problem Statement**

These days, Africa is experiencing rapid urbanization. In many cases, informal settlements are the main drivers of urbanization in cities (ARUP, 2016). National-level assessments indicate that Ethiopia's urban population will significantly increase between 2010 and 2040. Preliminary projections at the city level show that many of Ethiopia's large urban areas will multiply dramatically by 2040 (UN-Habitat, 2010). Urban areas have undergone significant changes in size, density, demography, and economy in recent decades. With rapid urbanization and globalization of trade and employment, the impact of these changes is even more evident in many rapidly developing Ethiopian cities and towns. Urbanization in and around Hosanna has been steadily increasing in recent years due to rural-urban migration (Solomon, 2008).

Hosanna, the capital city of Central Ethiopia Regional State and Hadiya zone, has a complex morphological pattern that is rapidly changing due to various interconnected forces of urbanization. Over the past fifteen years, the city has seen intensive restructuring of land use and land value patterns, particularly in planned residential areas. Due to unplanned changes in land use, these residential areas are becoming disorganized. The most significant changes are the growth of retail activities and other commercial developments. Retail stores have spontaneously emerged within residential areas to meet the demands of the growing population. Residential areas are gradually being transformed into commercial zones with different spatial characteristics, without proper planning. Densification is also occurring through the subdivision of large residential plots. This automated restructuring for high-density residential areas reflects the housing preferences of residents. Another unexpected phenomenon in these residential areas is the transformation of large plots into smaller subdivisions, resulting in the loss of the original design characteristics. This gradual shift from residential to commercial activities puts excessive strain on infrastructure, environmental resources, and social aspects, ultimately degrading the living conditions in the Gombora residential area. Therefore, there is a significant gap in establishing appropriate and coherent urban planning strategies, and the forces of urban change have contributed to the uncontrolled development of these areas. Most buildings in these areas are observed to violate building design regulations, leading to the transformation of their original features. The spontaneous growth of retail and other commercial activities disrupts the peaceful residential environment.

Planned residential areas are typically designed to provide a healthy atmosphere with essential service facilities, community amenities, and infrastructure. Supporting facilities, such as an elementary school, grocery stores, pharmacies, and medical clinics, are usually provided in appropriate numbers based on the population of the neighborhood. Unfortunately, in this residential area of Hosanna town, there are no supporting facilities. Consequently, small-scale commercial ventures, such as grocery stores, laundries, warehouse, stationery shops, and pharmacies, have emerged without proper planning. As landowners expanded their commercial activities in violation of existing rules and regulations, these activities were later legalized by paying conversion fees to the town municipality and the town development authority. These changes in land use were approved without conducting a thorough **study of the site**, utility schemes, and the needs of the residents.

## Aim of the Research

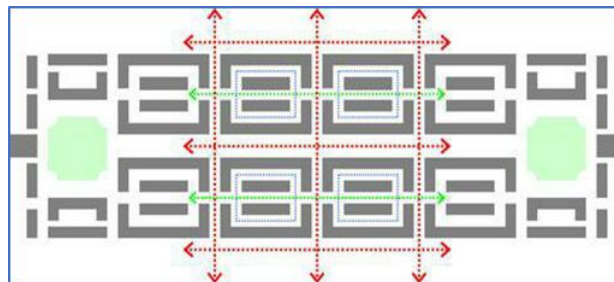
With the background of study and problem statement mentioned above, the aim of this research is to analyze the characteristics and process of morphological transformation, as well as its impact on residential built forms in the study area, from the perspective of urban design and planning. Therefore, it is important to investigate the impact of morphological transformation and its emerging commercial built forms on the quality of urban form and sustainability within the Gombora corridor in Hosanna.

## Empirical Literature

Urban morphology, a dynamic artifact, reflects the past and conceals a city's future development potential. Analyzing the morphological transformation over a historical period and gaining fundamental insights into socio-cultural change and contextual growth can help identify the problems that arise during urban development (Ling, X. 2015). This section aims to establish the theoretical basis for understanding the morphological transformation process and the functional aspects of a city's spatial structure. It will explain how society's functional forces impact the physical and spatial characteristics of an urban area. This theoretical framework will guide the conceptualization of the complex transformation process, its impact on urban area functionality, and the resulting built form. The review will also explore the potential of Space Syntax as a tool and its various measures for analyzing the morphological transformation of a planned area and its urban setting.

## Morphological and Visual Dimensions of Urban Design

Morphological urban design focuses on the structure of form and space in an urban environment, as well as the connection between spatial patterns of infrastructure. According to Carmona (2010), there are two types of urban space systems: one where buildings define space and the other where buildings are objects within space. Coznen (1990) identifies four primary morphological elements that illustrate how interconnected layers form morphological formations. Coznen explains that land uses are relatively temporary compared to



plot divisions, street patterns, and buildings. Changes in land use can involve the emergence of new uses and the departure of current ones. New uses often lead to the construction of new buildings, plot amalgamations or subdivisions, and sometimes changes to the street layout due to redevelopment. Each plot follows a recognizable cycle of building development. Buildings that remain in use for extended periods can accommodate various land uses or intensities as they age. For example, a building may transition from a high-end single-family dwelling to an office space, and eventually become on-campus student housing.

Cadastral units, also known as urban blocks, are typically divided into plots or lots (Figure 1). These plots may have frontages on main streets or circulation routes and share a common boundary at the rear. Some plots face the main roadway, while others have back service alleyways. Over time, plots may deteriorate, be sold or purchased, and experience changes in boundaries. Large plots may be subdivided, with the original owner retaining one part and selling or leasing the other. Conversely, multiple plots may be combined to create a larger development site and allow for the construction of larger buildings.

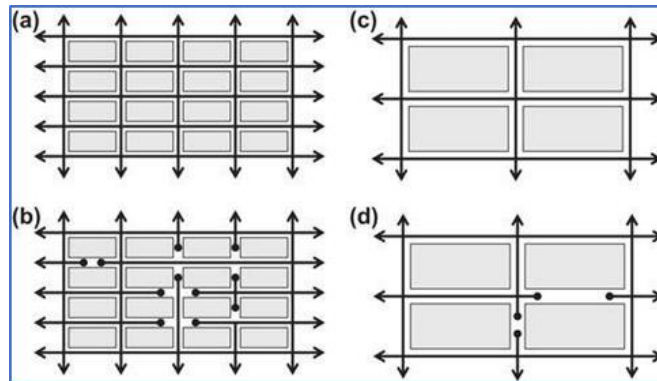
## Street Pattern

A cadastral street pattern describes the arrangement of urban blocks and the movement channels that are publicly accessible between those blocks. The public space network is comprised of the spaces between the blocks.



## The Visual Dimension

The visual-aesthetic character of the urban environment is derived from a mix of its spatial (volumetric) and visual aspects and the artifacts in those areas and their relationships. Architecture and urban design have been considered as unavoidable types of public art (Nasar 1998). "In many arts, an audience member may choose without significant consequence to engage and disengage with the work. We can buy and then put down a book or go to a movie and walk out. These arts have voluntary audiences. Similarly, the owners of built places are voluntary audiences. However, buildings, landscapes and public works also have significant involuntary audiences (Childs 2009)."

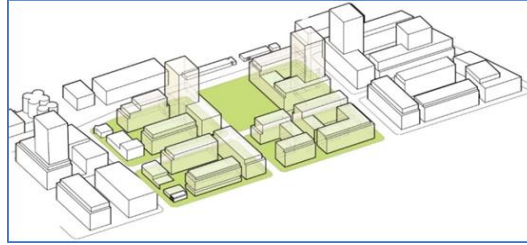


The **visual** and kinesthetic enjoyment of the urban environment primarily characterizes a town's aesthetics (through movement). According to Jack Nasar (1998) states determined the attributes of the general public's preferred environments, which included the following: Naturalness - Those habitats which have a greater abundance of natural elements than of constructed elements. Upkeep/Civilities - areas that seem to be maintained and looked after. Openness and defined space - an interesting and delightful combination of open space with panoramic views and scenic components, Historical significance/content-environments that make memories more pleasant, Order-cohesion, congruency, readability and clarity According to Walter Benjamin observation, most intervention in an urban environment influence on the urban form. However, concentrate on enhancing elements of the environment to increase the visual coherence, order, and harmony. As suggested by Smith (1980), there are four primary elements of aesthetic appreciation that transcend time and culture.

## Urban Morphology and Its Components

The analysis of the body and spatial patterning of built forms allows a viable assessment of cities as networks and complex bodies, establishing hyperlinks between any agreement's spatial shape and functioning (Batty & Longley, 1994). Urban morphology studies a city's body structure, consisting of road patterns and forms, urban design, the building of sizes and shapes, architecture, population density, and residential, commercial, industrial, and distinct patterns, among other items. Urban morphologists discuss the concentration on buildings and their surrounding spaces, several parcels, and streets, analyzed at one of a kind degree of judgment and strongly emphasizing historical context. The three essential city morphological research elements are form, decision, and time (Moudon, 1997).

Three essential physical elements characterize urban form in urban morphology: **the buildings and associated open spaces, plots or lots, and streets**. 'Plan Units' or 'tissue' is defined by Conzen as groups of houses, open spaces, lot, and streets that form a cohesive whole either because they have all been constructed at the same time or because they have been undergoing a typical phase of transformation (Moudon, 1997). The smallest factor is the lot, which determines the initial construction or creation's territorial limits and then transforms the constructed space. The lot or the plot has a spatial and urban component. The second aspect consists of the building and its open space in the third dimension. The arrangement usually sits on its lot, each owned by a social body that owns and uses the lots. They are the fundamental unit of urban space. The third element is the street block that group lots and buildings into the next spatial level. Cycles of building works and transformation are essential for urban and real estate planning and development (Moudon, 1997)



Therefore we will have ideas into the urban fabric's distinctive aspects and its specific formation process through its morphological analysis. The street block set a group of lots' spatial frontiers. These borders, in most cases, define the street space. Hence, the street blocks have segregated the private space from the collective public and the traffic area. Lot and buildings can also be used as a street space module.

## **Causes of Morphological Transformation**

### **The Physical and Spatial Components**

Urban Morphology involves a variety of forms, land use, and density. In turn, each of these has connotations of the shape, configuration, structure, pattern, and organization of land use and the system of relations between them (Batty & Longley, 1994). There are transformation rules that dictate the structure's change over time, and that structure and development are not random but comply with the law. According to urban morphology, the street pattern is the most enduring artifact in every urban settlement (Conzen, 1990). Additionally, buildings and their corresponding land use are the least resilient components. The same building may have several uses. Many occupancies and the same plot may be occupied by many buildings over time, while the relationship between the plot and the streets remains consistent.

However, this tends to happen within the context of existing street patterns (Conzen, 1990). Urban buildings can also change over time. They can be extended, vacated, recycled, and replaced by other constructions, which can influence the form of the settlement. The shifting character of building use becomes the primary mechanism of urban system change within the relatively fixed nature of the road network (Erickson & Lloyd-Jones, 1997). The spatial network plays an essential role in the change process. The city's spatial structure plays a crucial role in the growth of the demand for urban properties. The city's complexity is represented as a mixture of busy mixed areas and more homogeneous and quiet residential areas. The layout of the urban grid is, therefore, a significant factor in urban movement. This relationship is strongly affected by the effect on urban elements: land use pattern, building densities, the combination of uses in urban areas, and a part of the urban structure. This has a substantial impact on cities since it has significant implications for both form and function (Hillier, 1996).

The spatial structure that creates attraction together accounts for urban movement. Movement has an impact on the long-term evolution of the urban surface due to its impact on accessibility. Restructuring of land use patterns and land value patterns is often connected to changes in the pattern of accessibility (Desyllas, 1997). Street width and continuity of the streets are essential determinants of these changes. Urban morphology studies the urban form and its transformation bi-directionally in the spatial and physical dimensions. It refers to several causes and forces that transform it, but it is also a force by itself. Economic and political factors, on the other hand, have determined urban development function only within the constraints and limits imposed by this spatially driven process. Thus, the transformation process dynamics affect the different urban morphology elements and bring changes in the city's overall configuration. To understand the process of morphological transformation of an urban area, we must investigate the relation between its spatial and functional dynamics and how the socio-economic reality of urban societies drives these changes.

### **The Socioeconomic Drivers**

The urban environment consists of a variety of activities carried out by individuals and groups, which are regulated by cultural norms and influenced by social and economic powers (Mondon, 1997). The city is primarily shaped by socio-economic forces, particularly the relationship between movement and the urban grid

structure. Economic forces play a crucial role in both short-term shifts and long-term development in urban areas. Activities of a similar nature tend to cluster together, while external economic benefits attract complementary companies and activities. The increased demand for housing leads to the construction of taller buildings and higher land prices. The rapid transformation of the urban region is evident in the changing spatial patterns of places, the intensity of land use, and land prices (Goodall, 1979). To understand the process of morphological transformation, it is important to consider all the factors that contribute to the shaping of the built-up environment. This includes analyzing the spatial and physical elements of the urban area, such as buildings, building plots, open areas, and streets, as well as the economic and political factors that ultimately guide the morphological transformation process.

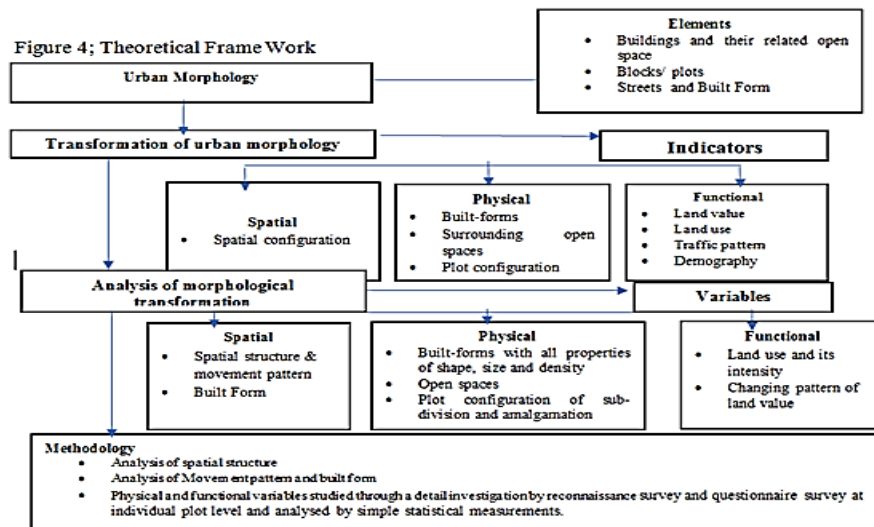
### The Relation between Built Form and Function

Cities are physical structures consisting of a continuous network of space and usable sites linked to specific land use. Therefore, the city can be defined as a combination of two spatial systems (Erickson, 1997). Networks enable movement and access, supporting and connecting buildings and their various uses, which are referred to as form. Additionally, distinct spaces associated with individual ownership and uses, or a set of uses, are referred to as function.

When considering the shape and function of each spatial structure, the space itself represents the shape, while the activities conducted within it represent the function. The primary connection between the form of space and its use suggests that space is presented to us as a fixed potential, and we as individuals and collectives exploit this potential through the use of space. This allows for the analysis and prediction of the space-function relationship to some extent.

The pattern of road networks is one of the most enduring features of a city (Rossi, 1982). The relationship between plots of land and streets generally remains consistent. Sometimes, plots are subdivided by adjusting to the existing street pattern (Conzen, 1990). Furthermore, the changing nature of building use within the street network becomes the primary mechanism for morphological transformation in the urban system. Hillier and Penn (1993) describe this as a movement economy, where the distribution of functions or activities within the urban structure is regulated. All movements within the network occur between functional position pairs. The total movement is influenced not only by the total origin and destination but also by the system configuration and how it facilitates movement. While the distribution of functions may change over time, it will impact the physical configuration of the street network.

Figure 4; Theoretical Frame Work



Source:

Compiled by Author, 2023

## **Materials and Methods**

This section addresses the author's selection of research methods that best match the research questions and investigate the research issues. It discusses the various methods used in this study, including data collection and interpretation techniques, case selection criteria, sampling, and research design. For this study, a mixed-method approach that incorporates both qualitative and quantitative approaches is chosen to investigate the depth and breadth of the problems. The case study approach is used because it is more appropriate for analyzing descriptive, causal, or explanatory topics (Yin, 2009). The author used three main methods: qualitative, quantitative, and mixed-methods to explore ideas. These methods include case studies, self-reporting, surveys, and interviews. A combination of qualitative and quantitative methods is used to assess the characteristics of the problem and estimate its magnitude. The qualitative method allows for the exploration of settlement characteristics and morphological transformations. Therefore, using questionnaires, measurements, observations, or other tools in a case study helps clarify these phenomena.

This study has employed both quantitative and qualitative data. Quantitative data was gathered through structured interviews, measurements, mapping, direct observation, photogrammetry, structured observations, and secondary sources. Qualitative data collection was done using methods such as semi-structured techniques or unstructured ones. Some standard methods include direct or participatory observations, photography, focus group discussions, video recording, profound interviews, and review of documents, mapping, and sketching. The gathered data was analyzed using charts, tables, and figures. Synchronic analysis, diachronic analysis, and life story analysis were used for qualitative data.

## **Results and Discussion**

Cities and towns are the largest and most complex structures created by people. They do not occur naturally, but rather develop and change over long periods of time, sometimes spanning tens, hundreds, or even thousands of years. While some ideas, plans, methods, or projects may persist for a while, they are often replaced, reorganized, or improved upon in subsequent centuries. The unique contexts, histories, populations, political systems, and economies of each city or town distinguish them from one another, as will be explained in this review. Towns exhibit various patterns of development, both formal and informal, which shape their physical structures over time. Therefore, it is important to understand the morphological forms and spatial transformations that define towns with thousands of years of urban evolution. This understanding helps explain the changes in residential areas that occur as part of a town's development. This section focuses on the growth process and significant spatial transformations of Hosanna town on a global scale, in order to examine how the town's overall framework influences the development of the planned residential areas being studied. Thus, this section explores the changes that have occurred along the Gombora corridor, specifically looking at the transformation of built structures and their functions, as well as the emergence of new and unique buildings. The analysis has also examined the development of buildings and their surrounding spaces over time, documenting changes in land use intensity and overall land use patterns.

### **Physical Growth of Hosanna Town**

Hosanna is one of the oldest towns in Ethiopia, officially established in 1904 during the reign of Emperor Menelik II. The town was originally called "Sech Duna" by the local people. Later, in 1904, the name was given by Ras Abate, the governor of Lemo and Kembata Awraja.

During the Imperial regimes, the town served as the seat of Kembata and Hadiya province. In 1949, the town was established as a municipal administration in the Central Ethiopia Regional State. Currently, it is one of the 22 reform towns in CERS and one of the cluster secondary urban centers of the Central Ethiopian Regional State. It is also the capital city of Hadiya Zone, which previously consisted of three sub-cities (Kifle Ketema) and eight kebeles but is now compressed to six kebeles. Hosanna is located in a strategic location, almost in the middle of seven zones, including Yem, Gurage, Selti, Halaba, Kembata, and Hadiya zone. This advantageous location has allowed the town to benefit from various physical, economic, and social advantages, contributing to its continuous expansion. In recent years, the town has experienced further growth due to factors such as overpopulated and underdeveloped rural areas surrounding it, concentrated capital investments, and changes in the economic order. Additionally, the town has access roads connecting it to Addis Ababa, Butajira, Durame,

Welkite, and the woreda towns of the Hadiya zone, where the Gombora corridor is located, which serves as a case study area for research.

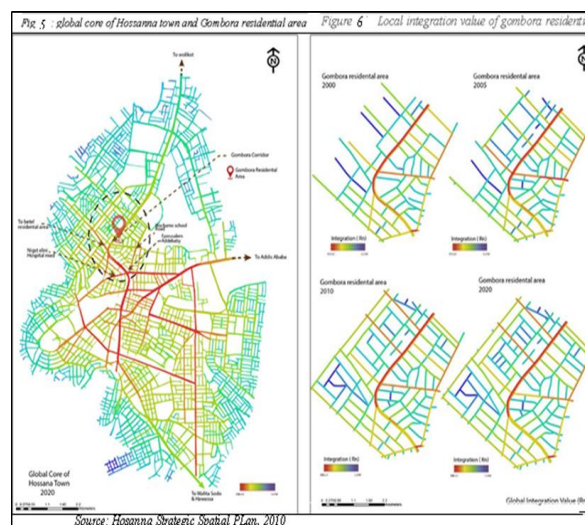
### The Physical and Functional Analysis of Study Area

The study of the vertical expansion of buildings, the rise in housing density, the decrease in open spaces, and the unique patterns of demolition and survival of structures are all part of the analysis of urban evolution. This analysis is initiated by the interaction between building, land use, and other factors associated with the dynamics of urban growth. The Gombora residential area exhibits a process of morphological transformation and changes in its original land use pattern, the intensity of land use, land value, and other functional aspects of socioeconomic status. The plots along the Gombora corridor seem to be more open to this process. Therefore, only the plots along this corridor are considered for this study of morphological transformation. For this study, only one plot deep along the entire length of the road is considered, excluding the plots designated for commercial use. This decision is based on the fact that the concerned authority has permitted only these plots on either side of the Gombora Corridor land-use conversion, as illustrated in Figures 5 and 6 below. These plots are marked in red along the entire length of the Gombora corridor.

### Spatial Character of Gombora residential area

The analysis results reveal that the global core of Hosanna town is gradually expanding, both physically and functionally. Over time, the planned residential districts have been morphologically transformed, with emerging commercial built forms such as the Gombora corridor. As a result, the functional core has become closer to the planned area, following the global core of the city (Fig. 6). According to Space Syntax theory, the spatial structure of a city can provide insights into the urban fabric and its integration with urban functions, such as movement and land use. Additionally, the spatial structure has been highly suggestive of the functional and present accessibility of the area, as demonstrated by a syntactic study of the Gombora Corridor. The analysis results also reveal that the Gombora residential neighborhood has maintained a similar morphology throughout its history, with buildings, streets, plots, and blocks dispersed across the region and minimal modifications during its growth period as an autonomous system (fig 6).

The entire residential area of the Gombora Corridor is virtually divided into three segments by intersecting roads and road patterns. For the sake of easy reference, these segments are named the east zone, west zone, and north zone in this study. The east zone covers the portion of Gombora starting from Eyerusalem circle to Wachemo high school, the west zone constitutes the area between Gulet water tank and Gorgwade residential area road, and the north zone defines the part of Gombora from Gorgwade road up to the northern end of this area. These divisions are illustrated in Figures 5 and 6. The figures also depict the plots of different sizes with their plot numbers along the case study corridor, with the east zone containing the longest part and the most transformed area of the Gombora Corridor. The maximum numbers of plots selected for the case study were located in this zone.



## Built-Form and Morphological Transformation Analysis Land Use & Its Intensity

Figure 7 below illustrates that land-use patterns are a critical component of urban design and are directly linked to the transformation of residential areas into emerging commercial forms. It is widely believed that two-dimensional plans are established first, followed by the use of three-dimensional spaces and activities to demonstrate the morphological transformation of the built environment. However, the Gombora residential area was initially planned solely for residential use. In the initial phase, commercial functions were limited, only confirmed within certain areas, such as the Eyerusalem nodal point. As the study area expanded, it became increasingly important within the overall urban grid, resulting in a new global integration pattern that significantly impacted accessibility and centrality. This led to a new configuration of functional activities and a transformation in the spatial form and structure.



Figure 7: Location of Study Area along Gombora corridor

Furthermore, the unique characteristics of urban growth and structures have also been influenced by changes in the urban economic basis. The growth has encouraged the emergence of new activities and the expansion of existing ones, leading to organizational changes within the area. The analysis results clearly indicate that the Gombora residential area, initially designated for residential use, gradually transformed into other land uses in later phases. This transformation began when private property owners started leasing out their land for commercial or business services, such as warehouses, stores, restaurants, or guest houses, to benefit the surrounding neighborhood. This gradual intrusion of commercial use, followed by the development of large commercial buildings along the Gombora corridor, significantly changed the overall structure of the built environment. The development of commercial forms along this corridor was inevitable, as it is a principal arterial street with easy accessibility and large usable parcels of land on both sides of the block. These emerging commercial forms serve as a clear demonstration of the morphological transformation of the study corridor.

On the other hand, the analysis results reveal that the land-use conversion of the Gombora corridor began in the early 2000s. Information sources also indicate that detailed land-use information was not available earlier along the Gombora corridor. This study focuses on examining how land use is changing from residential to commercial in 2023, based on a field survey conducted at this location. In this study, land use is categorized into two main components: residential and commercial. The various commercial land uses along this corridor, such as retail, restaurants, warehouses, stores, health facilities, banks, and mixed-use buildings, are classified under a single category. The conversion of land use is an influential factor in the morphological transformation

and aids in the data collection process. The information collected through the reconnaissance survey is recorded for three separate zones of the Gombora area. The study-built forms are classified into four classes: A) original built-form retained with original use, B) original built-form renovated for commercial use, C) new buildings constructed for commercial use, and D) new buildings with residential use. The term "original built-form" refers to the first phase of building construction for single-family residential use, while "original use" refers to residential use.

**Table 2: Summary of Different Category of Built-form**

	East Zone	West Zone	North Zone	Total	Percent
No. of plots including sub-division	159	53	79	291	
No. of A type	58	28	30	116	39.86%
No. of B type	65	12	29	106	36.43%
No. of C type	27	7	15	49	16.84%
No. of D type	9	6	5	20	6.87%

Source: Field Survey, 2023

Table 2 above depicts the number of plots with old buildings that are still being used for residential purposes, as determined by type A. Type B in the table also indicates the number of plots where existing residential structures have been partially or completely changed to fit new commercial use, reflecting the conversion of land use. Type C records the number of plots in which old residential buildings have been demolished to construct new buildings for commercial use, showing changes in both built form and land use. This category alone signifies a complete transformation of the plots. Type D records the number of plots with new construction that have a higher density or are used for residential purposes. Adding the values of type A and type D gives the total number of plots used for residential purposes, which accounts for about 47% of the total number of plots (291 plots). Adding the values of type B and type C shows the total number of plots that have allowed the change in land use from residential to commercial, regardless of the type of built form (old or new). Counting the total of type C and type D categories provides information on the transformation of built form, regardless of their use, along the Gombora corridor.

**Table 3: Transformation along Gombora corridor**

	East Zone	West Zone	North Zone
Transformation of land use (type B + type C)	57.86%	35.85%	55.70%
Complete transformation of plots (changes in built form & land use, type C)	16.98%	13.21%	18.99%
Transformation of built form (type C + type D)	22.64%	24.53%	25.32%

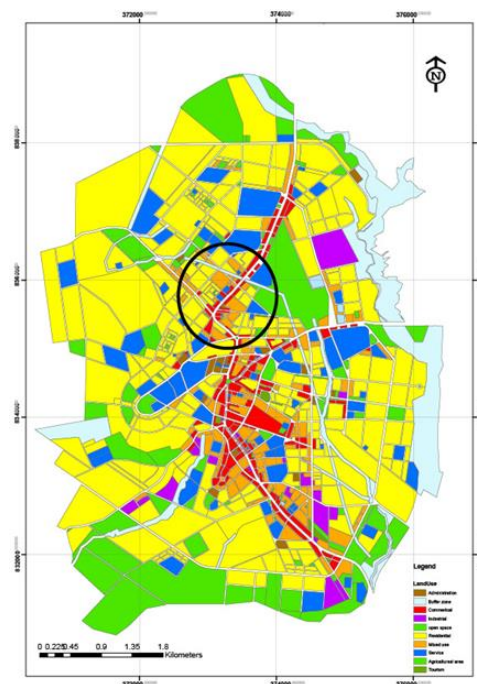
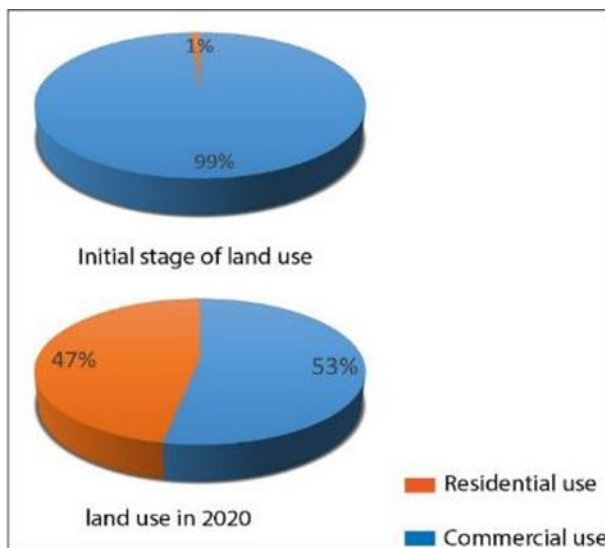
Source: Field Survey, 2023

Table 3 above depicts different categories of transformation patterns recorded along the Gombora corridor in three zones. The data has been recorded for three separate zones of the Gombora residential area to understand how the transformation process has affected the different segments along the corridor. The table also shows that the East Zone of the Gombora area exhibits the highest value, with 57.86% of the plots in that zone undergoing land-use conversion. In the North zone, 25.32% of the plots had their original residential buildings demolished or partially demolished, and new buildings were constructed on subdivided land. In comparison, 25.32% of the plots underwent complete transformation, where old buildings were demolished and new buildings with commercial use appeared. These results are aggregated in Table 4, which reveals that a total of 17% of the plots along the entire length of the Gombora corridor allowed for a complete transformation of both built-form and land use. Additionally, 53% of the plots out of the total number of 291 plots along this road featured land-use changes solely, whether they maintained the same building or utilized a new premise. Furthermore, 24% of the plots in the general area had new buildings. As a result, land use is the most prominent aspect along the Gombora corridor, with 53% of the plots transitioning from residential to commercial use. The transformation of the functional aspect along the corridor is witnessed as a distinctive aspect.

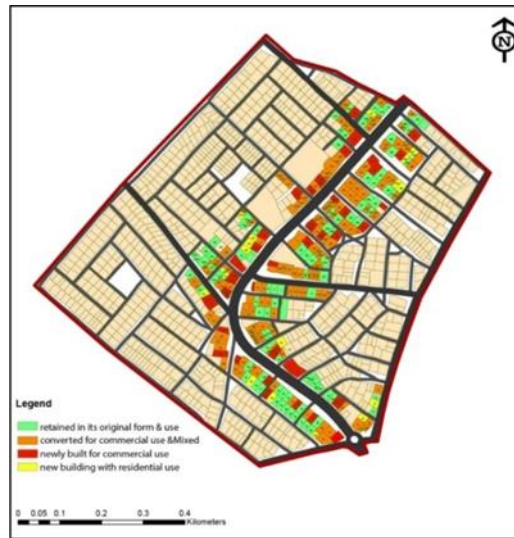
The transformation of land use along the Gombora corridor is shown by a pie chart in Figure 9, depicting the increasing rate of commercial use of plots. Figure 10 shows the different categories of built-forms with their use type along the Gombora corridor. The transformation of land use is an important indicator of morphological transformation because the change in one plot seems to trigger changes in adjacent plots. These data support the observation made in the discussion on the spatial structure of the Gombora area. The Gombora corridor offers greater accessibility, which appears to be attracting non-residential applications along this route, altering the functional pattern of this area. This shift in land use from residential to commercial means that each plot is being used more intensively than before, as the increased demand for commercial space has made multi-storey buildings profitable. Hence, most of these new commercial buildings have essentially become multi-storey structures.

### Commercial Use nature of Gombora Corridor

In addition to spatial forces, economic forces also play a role in determining land use types and transforming land use in urban areas. Economic factors are primarily influenced by the relationship between mobility and the structure of the urban grid. The Appendix provides a description of the commercial activities taking place along the Gombora corridor, including banking services (such as Awash bank, Abyssinia bank, Birhan bank, and Commercial bank), restaurants, shops, cafes, offices, telecommunication network services (such as Ethio telecom), and other private sector firms. This shows a shift in the principal business activity towards this area. Table 3 indicates that 53 percent of the transformed land use in the entire area has been calculated. It appears that economic activities have gradually led to this transformation. In the functional context of Hossana town, the Gombora area has developed into a sub-center. This is due to the urban growth of Hossana town in the past decade, coupled with the globalization of the country's economy, which has resulted in the need for economic activities to occupy prestigious and valuable urban areas, as the existing central business district (CBD) could not accommodate all these activities. The development of the Gombora corridor as a commercial sub-center can be attributed to this factor. The concentration of these economic activities will further influence other complementary and competitive activities in this area. Therefore, the spatial force of transformation, along with its impact on accessibility, is further strengthened by the economic force of transformation. The interaction between these two forces seems to be responsible for the development of functional areas along the Gombora corridor.







### **The Land Use Change Practice along the Corridor of Gombora**

During a study of users and developers, it was discovered that there are certain irregularities in the process of land-use change of properties along the Gombora corridor. In early 2010, the owners started to create pressure for land use conversion. Since it was not approved by the Hossanna town municipality (HTM, 2010), many residential buildings along the corridor were illegally occupied by commercial uses. Building regulations were not effectively applied to control such activities. The building plan was approved as residential, allowing commercial use of plots without any legal ground. Many landowners and developers took advantage of this loophole in the construction rule. Since the Hossanna town municipality was not concerned about the changes made in the internal layout of buildings, building use conversion was preferred over land use conversion. The building height was permanently restricted up to 7 stories. This rule was not publicly announced. As it is not a reflection of legal practice, the owners and developers refused to provide the detailed floor plans of these buildings. This study shows that the illegal occupancy of residential buildings by commercial users, violation of building construction law, exploitation of building rules along administrative loopholes, misunderstanding between different authorities, lack of strong government control, and improper use of political power are all responsible for these differing practices along the Gombora corridor

### **Plot Configuration with the Pattern of Sub-Division and Amalgamation**

According to Shirvani (1980), the primary characteristic of cities and towns is their unique spatial character. Both planned and unplanned settlements typically have simple patterns of streets and blocks, with town blocks as the fundamental element. In the Gombora residential area, blocks were initially laid out in a simple rectangular grid pattern with a major access road running through the middle. The blocks were designed with large plots of varying sizes, some of which were later subdivided. It is known from theory that the initial block size and lot layout in an urban area have predictable effects on subsequent development patterns (Schbeer & Ferdelman, 2001). Therefore, this study first identifies the earliest block shapes and plots in the Gombora residential neighborhood. It then examines the evolution process and identifies the critical periods of development, studying how these plots reacted to changing conditions. To get a general idea about this variable, the plots along the entire length of the Gombora area are studied, assessing different phases of development. A more detailed survey is then conducted through a case study to capture the transformation of plot configuration. The different phases of the transformation process are studied based on land survey maps that show individual property lines, boundaries, and building footprints. The criteria for determining the periods of different phases are discussed at the beginning of this chapter.



**Phase 1 (2000-2005):** The first phase of development in the Gombora residential area is evident from the map dated 2000-2005 (Fig: 12). The design of large blocks can be seen here, with plot sizes ranging from 1500m<sup>2</sup> to 500m<sup>2</sup>. During this period, there was a low demand for plots in this area. These plots were later subdivided into larger plots in the northern and northwest sections of the area. Land subdivision in this case served as a way to provide urban land directly to the general population. Some landlords occupied large plots, while others extensively subdivided their blocks, creating plots of various sizes to distribute among others. Many blocks on Gombora Street had two rows of plots on opposite sides of the street, while others had large plots lined up on one side of the street. However, these plots had the advantage of a secondary entry from the access road at the back.

**Phase 2 (2006-2011):** Investigation of the map from 2006 to 2011 (Fig: 13) reveals the second phase of urban development. During this period, several blocks underwent modifications. Some large blocks along the Gombora corridor were fragmented with revised plot divisions. In some cases, two or more plots were merged to create a larger plot for potential commercial buildings, based on speculation. Additionally, many large areas were split into two or three different properties. By lanes were provided where necessary to allow access to the plots at the back. As a result, a dense urban structure began to emerge from these divisions. The population expansion and the widespread availability of remittance led to the subdivision of plots into smaller ones. The Diasporas persuaded landowners to either sell their lands entirely or subdivide them. This was a significant and symbolic phenomenon. In this phase, the commercial plots around the corridor appeared to be poorly defined, lacking clear delineation of the commercial zone limits. Although some plots along the corridor were observed to have subdivisions with a small amount of commercial invasion, the average size of these subdivided plots ranged from 500m<sup>2</sup> to 250m<sup>2</sup>. This subdivision of land into segments and streets had a noticeable effect on the future expansion and redevelopment of the corridor, as seen in phase 3.



Figure 14: Gombora residential area from 2012 – 2017 (phase 3)

**Phase 3 (2012-2017):** The surveyed area layout map started in 2012 and was completed in 2017. Upon closer examination, the maps show more dramatic changes in the configuration of plots compared to older maps. During this phase, the consecutive division of plots occurred at a faster pace, as subdividing a plot causes nearby plots to reorganize into a higher plot ratio. Combining the results of earlier subdivisions allowed specific formerly subdivided plots to be shown as merged again (Fig: 14). Therefore, plots were subdivided in one phase and amalgamated again in the next phase to accommodate the changing land use according to the users' preferences. Thus, both the physical and functional transformations continued to coexist. Land values increased for corridor plots due to their economic importance and high value potential.

**Phase 4 (2018-2023):** Based on available information, distinctive morphological alterations can be observed along the Gombora corridor plots (Fig 15). Throughout several stages, many properties were subdivided into smaller plots. These plots remained valuable for commercial development. Originally, these plots were not intended to become high-density urban areas. They were long and had only one side facing the main road, usually the narrow side. However, these plots now have the potential for higher land-use intensity, allowing for multi-story buildings and increased land coverage. The problem is exacerbated by land speculation and unclear urban planning regulations. A study found significant restructuring of plots along the Gombora corridor during the transformation period. Subdividing the original plots into smaller ones systematically leads to more intense land usage. It is believed that larger plots, such as case study plots numbers 21, 39, and 45,120, were more susceptible to this process. Additionally, there was a growing demand for large plots of land for commercial development along the Gombora principal road, which accelerated the transformation along this corridor.

Between 2000 and 2005, there were 195 residential plots (excluding those designated for commercial use) along the Gombora corridor. In phase 2, from 2006 to 2011, the number of plots increased to 221, surpassing the previous phase by 14%. From 2012 to 2017, the number of plots increased to 251, a 29% increase from the initial 195. **By 2023**, the number of plots had increased by almost 50% (table 4). The undivided plots in the initial phase were larger, ranging from 500m<sup>2</sup> to 1000m<sup>2</sup>, compared to the subdivided plots along the Gombora corridor. This information can be used to conduct a detailed examination of a case study to support the plot configuration transformation process.



Figure 15: Gombora residential area in 2023(phase 4)

Table 4: Total number of plots along Gombora corridor (excluding commercially designated plots)

A different phase of development	Total no. of plots (after sub-division & amalgamation)
From 2000 - 2005	195
From 2006 - 2011	221
From 2012 - 2017	251
Year 2018 - 2023	291

Source: Field Survey, 2023

Figures 14 and 15 above illustrate that some plots, such as cases no. 3 and 9 in table 5, remained vacant during phase 1, and the first development of the site only took place after small built-forms emerged. In case 4 (an area of 970m<sup>2</sup>), some large plots were subdivided into four parts. In case no. 13, a large plot underwent building demolition twice in two successive periods and was finally developed in 2023 with a large commercial building. Case numbers 5 and 6 show that some plots also underwent building demolition twice within a very short interval. Some plots were subdivided in one phase and later amalgamated to accommodate a commercial building. This phenomenon highlights that initial subdivision of large plots was observed, and in later phases, some of these subdivided plots were amalgamated to accommodate commercial buildings.

Therefore, emerging commercial buildings require ample floor space for their use. Consequently, the analysis results reveal a growing demand for large-sized plots along the Gombora corridor. The development of multi-story commercial structures on large plots took precedence over residential use, shaping the morphological transformation. The division and merging of plots appear to demonstrate adaptability to shifting needs in order to maximize landowners' profits. Table 5 presents the record of the land area of the selected case studies along the Gombora corridor. Based on the data shown in the table, plots ranging from at least 400m<sup>2</sup> to 1000m<sup>2</sup> in size dominated the early phase, but in later periods of subdivision, the space decreased to between 150 and 500 square meters. The process of transformation along the Gombora corridor, therefore, involves changes in plot patterns (subdivision or merger of initial plots), resulting from increased building density and changes in land use.

Table 5: Survey of the Plot area of selected case study along Gombora corridor

Case no.	Phase 1 (2000-2005)		No. of sub-divided	Phase 4 (2018 - 2023)	
	Plot no.	Total land area		New plot no.	Area of land
1	21	715m <sup>2</sup>	2	21a	350m <sup>2</sup>
				21b	365m <sup>2</sup>
2	39	600m <sup>2</sup>	2	39a	250m <sup>2</sup>
				39b	350m <sup>2</sup>
3	85	500m <sup>2</sup>	0		485m <sup>2</sup>
4	114	400m <sup>2</sup>	0		400m <sup>2</sup>
5	204	900m <sup>2</sup>	2	204a	500m <sup>2</sup>
				204b	400m <sup>2</sup>
6	263	590m <sup>2</sup>	2	263a	270m <sup>2</sup>
				263b	320m <sup>2</sup>
7	159	925m <sup>2</sup>	0		925m <sup>2</sup>
8	150	620m <sup>2</sup>	2	150a	290m <sup>2</sup>
				150b	330m <sup>2</sup>
9	138	600m <sup>2</sup>	0		600m <sup>2</sup>
10	97	735m <sup>2</sup>	2	97a	290m <sup>2</sup>
				97b	446m <sup>2</sup>
11	120	525m <sup>2</sup>	3	120a	160m <sup>2</sup>
				120b	210m <sup>2</sup>
				120c	155m <sup>2</sup>
12	275	925m <sup>2</sup>	2	275a	595m <sup>2</sup>
				275b	330m <sup>2</sup>
13	170	490m <sup>2</sup>	2	170a	350m <sup>2</sup>
				170b	140m <sup>2</sup>

Source: Field Survey, 2023

### Built-Form with Their Morphological Properties

An urban area consists of various elements that people have chosen to construct physical structures. During the transformation period (2000-2023), the Gombora corridor witnessed the emergence of new built forms, which provided visible evidence of change through the reorganization or demolition of residences and the construction of modern commercial structures. Buildings are the prominent components of urban blocks, which in turn serve to connect different types of land uses and contribute to the overall morphology of the area. By using urban blocks as a spatial unit, morphological analysis can link the socio-economic characteristics of urban areas to examine their functions, particularly the evaluation of economic activities within them. Through measuring and analyzing the morphological characteristics of the built forms, it is possible to develop a quantitative understanding of plot size, land use, and the overall morphology. In this analysis, the author identified several morphological features of the built forms, including the area occupied by buildings (built-up area), the unbuilt area, and the ratio of building size to plot size. These properties were calculated for each phase of development in order to facilitate quantitative comparisons. To determine the building to land ratio, the area occupied by the buildings was divided by the plot area of each parcel, as shown in Figure 17. The average value of these parameters was considered representative of the entire Gombora corridor. The nature of the emerging built forms was illustrated through case studies conducted on selected plots (Figure 17)

### Survey of built forms selected case study

The morphological properties of the case studies in Figures 16 and 17 were analyzed to represent intensive land use and the process of transformation. The changes in built form, unbuilt area, and the ratio of building to land area of the selected case study are documented in the table above, throughout different phases of transformation along the Gombora corridor. These morphological changes indicate the transformation process, as explained in the literature in the previous section. A detailed examination of these characteristics will result in a vivid

illustration of the morphological transformation along the Gombora corridor. Tables 7-10 provide a detailed study of the built forms, including their physical properties and plot configuration, throughout the different phases of development. The analytical measurements are mainly based on information provided by available maps and satellite images, except for 2023, when a field survey was conducted. The author has observed that these changes have influenced the morphological characteristics of the built forms in terms of land size and land use restructuring.

Cases	Phase 1 (2000_ 2005)	Phase 2 (2006_ 2011)	Phase 3 (2012_ 2017)	Phase 4 (2018-2023)
5	 G+0 building Land Area: 400m <sup>2</sup> Land Use: residential Built-up Area: 45m <sup>2</sup> Unbuilt-up Area: 88.75%	 G+0 building Land Area: 400m <sup>2</sup> Land Use: residential Built-up Area: 45m <sup>2</sup> Unbuilt-up Area: 88.75%	 G+0 building Land Area: 400m <sup>2</sup> Land Use: Mixed Built-up Area: 145m <sup>2</sup> Unbuilt-up Area: 63%	 G+0 building Land Area: 400m <sup>2</sup> Land Use: Commercial Built-up Area: 330m <sup>2</sup> Unbuilt-up Area: 18%
6	 G+0 building Land Area: 900m <sup>2</sup> Land Use: residential Built-up Area: 180m <sup>2</sup> Unbuilt-up Area: 80%	 G+0 building Land Area: 900m <sup>2</sup> Land Use: residential Built-up Area: 270m <sup>2</sup> Unbuilt-up Area: 70%	 G+3 (plot a) Land Area: 500m <sup>2</sup> Use: Commercial G+0 (plot b) Land Area: 400m <sup>2</sup> Use: Commercial Built-up Area: 494m <sup>2</sup> Unbuilt-up Area: 45%	 G+3 (plot a) Land Area: 500m <sup>2</sup> Use: Commercial G+0 (plot b) Land Area: 400m <sup>2</sup> Use: Commercial Built-up Area: 743m <sup>2</sup> Unbuilt-up Area: 17.4%
7	 G+0 building Land Area: 590m <sup>2</sup> Land Use: residential Built-up Area: 149m <sup>2</sup> Unbuilt-up Area: 75%	 G+0 building Land Area: 590m <sup>2</sup> Land Use: residential Built-up Area: 213m <sup>2</sup> Unbuilt-up Area: 64%	 G+0 building Land Area: 590m <sup>2</sup> Land Use: Mixed Built-up Area: 320m <sup>2</sup> Unbuilt-up Area: 45.5%	 G+2 (plot b) Land Area: 320m <sup>2</sup> Use: Commercial G+0 (plot a) Land Area: 270m <sup>2</sup> Use: Mixed Built-up Area: 492m <sup>2</sup> Unbuilt-up Area: 17%
8	 G+0 building Land Area: 925m <sup>2</sup> Land Use: residential Built-up Area: 190m <sup>2</sup> Unbuilt-up Area: 79.4%	 G+0 building Land Area: 925m <sup>2</sup> Land Use: residential Built-up Area: 286m <sup>2</sup> Unbuilt-up Area: 69%	 G+0 building Land Area: 925m <sup>2</sup> Land Use: Mixed Built-up Area: 395m <sup>2</sup> Unbuilt-up Area: 57%	 G+1 building Land Area: 925m <sup>2</sup> Land Use: Commercial Built-up Area: 800m <sup>2</sup> Unbuilt-up Area: 13.5%

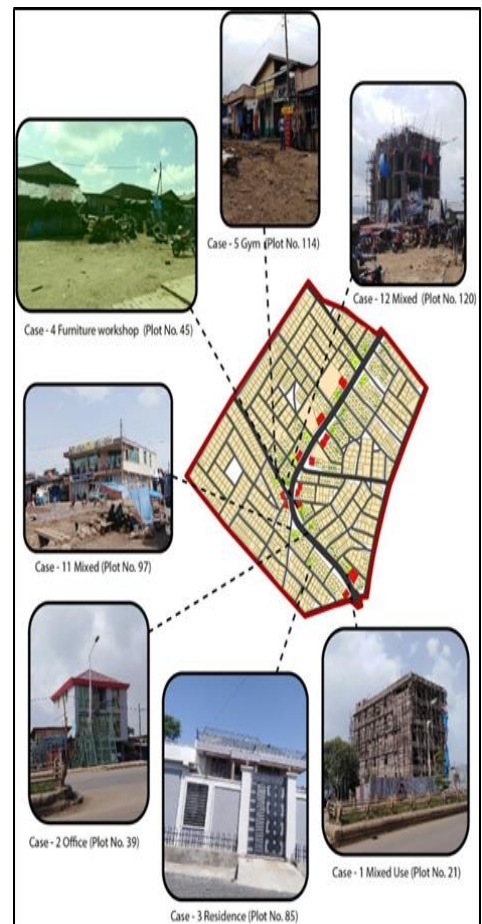


Table 7: Phase-1 Built-forms (2000-2005)

Case No.	Plot No.	Land use Type	No. of story	Ground floor area	Built area each floor	Total built area	Unbuilt area %
1	21	Residence	G+0	151	151	151	79%
2	39	Residence	G+0	130	130	130	78%
4	45	Residence	G+0	230	230	230	76%
5	114	Residence	G+0	45	45	45	88.75%
6	204	Residence	G+0	180	180	180	80%
7	263	Residence	G+0	149	149	149	75%
8	159	Residence	G+0	190	190	190	79.4%
9	150	Residence	vacant				
10	138	Residence	G+0	126	126	126	79%
11	97	Residence	G+0	74	74	74	89.8%
12	120	Residence	G+0	90	90	90	82.8%
13	275	Residence	G+0	100	100	100	89%
14	170	Residence	G+0	75	75	75	84%

Source: Field Survey, 2023

Table 8: Phase-2 Built-forms (2006-2011)

Case No.	Plot No.	Land use Type	No. of story	Ground floor area	Built area each floor	Total built area	Unbuilt area %
1	21	Residence	G+0	344	344	344	52%
2	39	Residence	G+0	257	257	257	58%
3	85	Residence	G+0	146	146	146	70%
4	45	Residence	G+0	314	314	314	67.6%
5	114	Residence	G+0	45	45	45	88.75%
6	204	Residence	G+0	270	270	270	70%
7	263	Residence	G+0	213	213	213	64%
8	159	Residence	G+0	286	286	286	69%
9	150	Residence	G+0	182	182	182	70%
10	138	Residence	G+0	210	210	210	65%
11	97	Residence	G+0	52	52	52	93%
12	120	Residence	G+0	135	135	135	74%
13	275	Residence	G+0	180	180	180	80%
14	170	Residence	G+0	120	120	120	75.5%

Source: Field Survey, 2023

Table 9: Phase-3 Built-forms (2012-2017)

Case No.	Plot No.	Land use Type	No. of story	Ground floor area	Built area each floor	Total built area	Unbuilt area %	
1	21	21a	Residence	G+0	220m <sup>2</sup>	220m <sup>2</sup>	220m <sup>2</sup>	44%
		21b	Residence	G+0	180 m <sup>2</sup>	180 m <sup>2</sup>		
2	39	39a	Residence	G+0	130 m <sup>2</sup>	130 m <sup>2</sup>	130 m <sup>2</sup>	41%
		39b	Commercial	G+2	226 m <sup>2</sup>	226 m <sup>2</sup>		
3	85		Residence	G+0	242 m <sup>2</sup>	242 m <sup>2</sup>	242 m <sup>2</sup>	51.6%
4	45	45a	Commercial	G+0	209 m <sup>2</sup>	209 m <sup>2</sup>	209 m <sup>2</sup>	57.5%
		45b	Commercial	G+0	120 m <sup>2</sup>	120 m <sup>2</sup>		
		45c	Mixed	G+0	83 m <sup>2</sup>	83 m <sup>2</sup>		

5	114		Mixed	G+0	114 m <sup>2</sup>	114 m <sup>2</sup>	114 m <sup>2</sup>	63%
6	204	204a	Commercial	G+3	365 m <sup>2</sup>	365 m <sup>2</sup>	1460 m <sup>2</sup>	45%
		204b	Commercial	G+0	130 m <sup>2</sup>	130 m <sup>2</sup>	130 m <sup>2</sup>	
7	263		Mixed	G+0	320 m <sup>2</sup>	320 m <sup>2</sup>	320 m <sup>2</sup>	45.5%
8	159		Mixed	G+0	395 m <sup>2</sup>	395 m <sup>2</sup>	395 m <sup>2</sup>	57%
9	150	150a	Commercial	G+0	134 m <sup>2</sup>	134 m <sup>2</sup>	134 m <sup>2</sup>	59%
		150b	Commercial	G+0	120 m <sup>2</sup>	120 m <sup>2</sup>	120 m <sup>2</sup>	
10	138		Mixed	G+0	302 m <sup>2</sup>	302 m <sup>2</sup>	302 m <sup>2</sup>	50%
11	97		Residence	G+0	347 m <sup>2</sup>	347 m <sup>2</sup>	347 m <sup>2</sup>	52%
12	120	120a	Residence	G+0	230 m <sup>2</sup>	230 m <sup>2</sup>	230 m <sup>2</sup>	42%
		120b	Mixed	G+0	76 m <sup>2</sup>	76 m <sup>2</sup>	76 m <sup>2</sup>	
13	275	275a	Mixed	G+0	204 m <sup>2</sup>	204 m <sup>2</sup>	204 m <sup>2</sup>	68%
		275b	Commercial	G+0	90 m <sup>2</sup>	90 m <sup>2</sup>	90 m <sup>2</sup>	

Source: Field Survey, 2023

Table 10: phase-4 Built-forms (2023)

Case No.	Plot No.	Land use Type	No. of story	Ground floor area	Built area each floor	Total built area	Unbuilt area %	
1	21	21a	Commercial	G+0	351m <sup>2</sup>	351m <sup>2</sup>	13%	
		21b	Mixed	G+0	276 m <sup>2</sup>	276 m <sup>2</sup>		
2	39	39a	Commercial	G+0	326m <sup>2</sup>	326m <sup>2</sup>	14.8%	
		39b	Commercial	G+2	185 m <sup>2</sup>	185 m <sup>2</sup>	555m <sup>2</sup>	
3	85		Residence	G+2	320 m <sup>2</sup>	320 m <sup>2</sup>	960 m <sup>2</sup>	34%
4	45	45a	Commercial	G+0	130 m <sup>2</sup>	130 m <sup>2</sup>	130 m <sup>2</sup>	16%
		45b	Commercial	G+0	160 m <sup>2</sup>	160 m <sup>2</sup>	160 m <sup>2</sup>	
		45c	Commercial	G+0	140 m <sup>2</sup>	140 m <sup>2</sup>	140 m <sup>2</sup>	
		45d	Mixed	G+0	381m <sup>2</sup>	381m <sup>2</sup>	381m <sup>2</sup>	
5	114		Commercial	G+0	330 m <sup>2</sup>	330 m <sup>2</sup>	330 m <sup>2</sup>	18%
6	204	204a	Commercial	G+3	420 m <sup>2</sup>	420 m <sup>2</sup>	1260 m <sup>2</sup>	17.4%
		204b	Commercial	G+0	323 m <sup>2</sup>	323 m <sup>2</sup>	323 m <sup>2</sup>	
7	263	263a	Mixed	G+0	229 m <sup>2</sup>	229 m <sup>2</sup>	229 m <sup>2</sup>	17%
		263b	Commercial	G+2	263 m <sup>2</sup>	263 m <sup>2</sup>	526 m <sup>2</sup>	
8	159		Commercial	G+1	800 m <sup>2</sup>	800 m <sup>2</sup>	1400 m <sup>2</sup>	13.5%
9	150	150a	Commercial	G+0	230 m <sup>2</sup>	230 m <sup>2</sup>	230 m <sup>2</sup>	19%
		150b	Commercial	G+0	270 m <sup>2</sup>	270 m <sup>2</sup>	270 m <sup>2</sup>	
10	138		Commercial	G+0	490 m <sup>2</sup>	490 m <sup>2</sup>	490 m <sup>2</sup>	18%
11	97	97a	Commercial	G+2	390 m <sup>2</sup>	390 m <sup>2</sup>	780 m <sup>2</sup>	15%
		97b	Commercial	G+0	240 m <sup>2</sup>	240 m <sup>2</sup>	240 m <sup>2</sup>	
12	120	120a	Commercial	G+0	130 m <sup>2</sup>	130 m <sup>2</sup>	130 m <sup>2</sup>	14%
		120b	Commercial	G+4	190 m <sup>2</sup>	190 m <sup>2</sup>	570 m <sup>2</sup>	
		120c	Commercial	G+4	130 m <sup>2</sup>	130 m <sup>2</sup>	390 m <sup>2</sup>	
13	275	275a	Commercial	G+5	490 m <sup>2</sup>	490 m <sup>2</sup>	2450 m <sup>2</sup>	13.5%
		275b	Commercial	G+0	300 m <sup>2</sup>	300 m <sup>2</sup>	300 m <sup>2</sup>	
14	170	170a	Residence	G+0	290 m <sup>2</sup>	290 m <sup>2</sup>	290 m <sup>2</sup>	19%
		170b	Commercial	G+0	110m <sup>2</sup>	110m <sup>2</sup>	110m <sup>2</sup>	

Source: Field Survey, 2023

Table 7 above shows that only a few plots in the study area were developed with small residential buildings. This means that at least 80% of the plot remains unbuilt, which is referred to as phase 1 (see figure 17). On the other hand, Table 8 indicates that the plots along the Gombora corridor started to see substantial development, marking phase 2. New residential buildings were constructed, but the surrounding open areas were left untouched. A few subdivided plots emerged, resulting in an increase in built-up area. Moving on to Table 9, it reveals that plot subdivisions were highly prevalent in the study area during phase 3. This led to a decrease in the percentage of unbuilt area, while the amount of built-up area and volume increased. Additionally, there was



a significant influx of commercial developments during this phase. This trend continued in phase 4, as shown in Table 10, where most plots were built with commercial buildings. This resulted in high-density areas and a decrease in open spaces. It is worth noting that some of these plots underwent building demolitions twice before reaching their current state. Overall, commercial built forms seem to characterize this urban area.

### Building to land ratio and unbuilt area ratio

Currently, most plots are occupied by commercial buildings, with a building to land ratio ranging from 70% to 90%. In comparison to the earlier stage, the value of the unbuilt area has decreased by 13% to 34% (see table 11 below). In the first phase, the building to land ratio averaged 20%, but it has now risen to 83% in the current phase (2023). The unbuilt area in the initial stage was 80% and has now decreased to 17%. As the development of a dense, compact spatial structure occurs through morphological transformation, the rate of open land reduction indicates intense urban expansion. The higher value of the building to land ratio suggests an increased demand for accommodation in this location over time or in different stages of development. This transformation has naturally occurred through changes in land use. To maximize the economic potential of individual plots, commercial buildings have replaced buildings from the first phase. Multi-story and high-density built forms have been prioritized over low-rise residential buildings to meet economic requirements and specific needs. As a result, the horizontal or vertical extension of built forms has been influenced by land use transformation and changes in land use demands on individual plots.

Table 11: Comparison Building to land ratio of to open area ratio

Case No.	Plot Nos.	Total Land Area	Initial stage			Current stage			
			Building foot print area	Building to land ratio (%)	Unbuilt Area (%)	Building foot print area	Building to land ratio (%)	Unbuilt Area (%)	
1	21 21a	715m <sup>2</sup>	151 m <sup>2</sup>	21%	79%	627 m <sup>2</sup>	87%	13%	
2	39 39a	600m <sup>2</sup>	130 m <sup>2</sup>	22%	78%	511 m <sup>2</sup>	85.2%	14.8%	
3	85	500m <sup>2</sup>	0 m <sup>2</sup>	0%	100%	321 m <sup>2</sup>	66%	34%	
4	45 45a	970m <sup>2</sup>	230 m <sup>2</sup>	24%	76%	812 m <sup>2</sup>	84%	16%	
5	114	400m <sup>2</sup>	45 m <sup>2</sup>	11.25%	88.75%	330 m <sup>2</sup>	82%	18%	
6	204 204a	900m <sup>2</sup>	180 m <sup>2</sup>	20%	80%	743 m <sup>2</sup>	82.6%	17.4%	
7	263 263a	590m <sup>2</sup>	149 m <sup>2</sup>	25%	75%	492 m <sup>2</sup>	83%	17%	
8	159	925m <sup>2</sup>	190 m <sup>2</sup>	20.6%	79.4%	800 m <sup>2</sup>	86.5%	13.5%	
9	150 150a	620m <sup>2</sup>	0 m <sup>2</sup>	0%	100%	500 m <sup>2</sup>	81%	19%	
10	138	600m <sup>2</sup>	126 m <sup>2</sup>	21%	79%	490 m <sup>2</sup>	82%	18%	
11	97 97a	735m <sup>2</sup>	74 m <sup>2</sup>	10.2%	89.8%	630 m <sup>2</sup>	85%	15%	
12	120 120a	525m <sup>2</sup>	90 m <sup>2</sup>	17.2%	82.8%	450 m <sup>2</sup>	86%	14%	
13	275 275a	925m <sup>2</sup>	100 m <sup>2</sup>	11%	89%	800 m <sup>2</sup>	86.5%	13.5%	
14	170 170a	490m <sup>2</sup>	75 m <sup>2</sup>	16%	84%	400 m <sup>2</sup>	81%	19%	
Average ratio			Initial stage		Current stage				
			Building to land ratio (%)	Unbuilt Area (%)	Area	Building to land ratio (%)	Unbuilt Area (%)		
			20%	80%		83%	17%		

Source: Field Survey, 2023

### Figure-Ground Relationship

A physical demonstration of this spatial property is possible with the help of the technique known as figure-ground. Figure 18 shows the historical sequence of building footprints, represented as the structures' floor-plates, to highlight constructed forms and spaces. It displays a selected portion of the Gombora corridor with plots aligned on each side from three different periods of development. The diagram highlights the layout of the Gombora area and shows how open spaces are filled by gradually expanding construction areas, ultimately resulting in a congested urban environment. Increasing density involves constructing multi-story buildings on these plots, which is necessary due to economic demand and changes in land usage. Therefore, this figure reflects the impact of urban development during the transformation period along the Gombora corridor. It depicts the transformation of the spatial character of the Gombora area through the development of a high-

density spatial form from a low-density area and changes in land use patterns. This aspect, along with the socio-economic base transformation in this area, is responsible for the morphological transformation along the Gombora corridor.



Figure 18: Figure-ground of Part of Gombora Area

## CONCLUSION AND RECOMMENDATION

### Conclusion

Residential areas have undergone numerous changes over several decades of occupancy. These changes, particularly in policy decisions regarding town development, can have both positive and negative effects. The results of this research show the transformation of the Gombora corridor into a commercial sub-center. The study examines the spatial, physical, and functional patterns that illustrate the growth of Gombora as a commercial sub-center. This case is unique and cannot be compared to any other. In this area, residential conditions have changed significantly, with commercial usage encroaching on homes along the road's strip line, and commercial areas expanding rapidly. As a result of increasing land prices and ownership, open spaces, green areas, and other facilities have greatly diminished. This study demonstrates that morphological transition is a complex interplay between various spatial and physical aspects of urban form and dynamic forces of transformation. The following section provides a brief overview of observations and analysis of several factors related to morphological changes along the Gombora corridor.

### Cause and characteristics of transformations

The findings of this study confirm the existence of multiple factors that influence the morphological transformation of an area. These factors include land use, economy, population, built forms, plot configuration, and land value. Additionally, in specific cases, social factors such as remittance and political situations play a primary role in spatial transformations within urban areas. This provides further insight for future study, suggesting that physical factors are more responsible for the initial formation of an area, while social factors are more responsible for subsequent transformations.

### The Economic Aspect

The Gombora area, which was partially segregated from the busy center of town, has been developed as a residential area. Due to the small population, large plots were arranged in a regular pattern for the development of houses. However, with the rapid urban growth of Hossana town and economic changes in recent decades,

there has been a dynamic shift in the choice of urban land use. There is now an increased demand for larger plots in areas that are more accessible, in order to accommodate higher-order economic activities. The Gombora area, with its strategic location in relation to the whole town, offers large usable plots along the Gombora corridor. As a result, the economic demand has further stimulated the spatial force that has led to the development of functional activities along this highly accessible road. This transformation has turned the once good residential area into a prestigious commercial area.

### **Land use**

There is a strong relationship between the spatial structure of an urban area and land use. The movements created by the morphology of the urban grid benefit everyone, especially those located near areas with specific land uses. The transformation of the spatial configuration of the Gombora residential area has resulted in increased accessibility along the Gombora corridor. This transformation has also had an impact on the entire neighborhood, leading to a phenomenon of commercialization. The most significant change along the Gombora corridor is the shift in land use, with 53% of the 291 plots being transformed from residential to commercial use. There is also a noticeable transformation in the functional aspect of the corridor. This change in land use is accommodated either within existing buildings or through the construction of new commercial structures. Approximately 17% of the plots in the corridor have undergone a complete transformation, including both land-use conversion and changes to the physical structures. This shift from residential to commercial land use suggests that each plot is now being utilized more intensively than before. The demand for commercial space, particularly multi-storied structures, has increased, making higher structures more profitable.

### **Plot Configuration**

On the plots along each side of the Gombora corridor and within the neighborhood development area, there has been a prioritization of multi-story commercial structures over residential use, which has shaped the morphological transformation of the area. As part of this transformation, the larger plots along this corridor (ranging from 400m<sup>2</sup> to 1000m<sup>2</sup>) have been observed to be subdivided and amalgamated in order to meet the changing demand. Occasionally, these plots are divided into two or three sections to increase building density or improve land usage. The average size of these subdivided plots ranges from 150m<sup>2</sup> to 500m<sup>2</sup>. Additionally, plots are sometimes combined (amalgamated) to create larger blocks of land for the construction of large-scale commercial structures. This is an effort to maximize the economic benefits for landowners and users. Currently, the total number of plots has increased to 291, which is approximately 40% more than the initial number of 195. The subdivision and merger (amalgamation) of plots are responses to changing conditions, and this unique pattern has influenced the emerging built-forms in the area.

### **Built-Forms**

Land use conversion along the Gombora corridor, which occurred as a natural consequence of the transformation of spatial aspects and the economic base of this urban area, has had a dynamic impact on the built form along the Gombora corridor. The emergence of large, multi-story buildings that dominate the streetscape of this road reflects the value of commercial patronage and economic investments. The concentration of higher-order economic activity along this road has created a demand for multi-story buildings that cover the maximum allowable floor area of the land. In order to maximize economic benefits from each plot, higher intensity of activities is required. As a result, a high-density spatial form has developed in this urban area, transforming the spatial character of the Gombora area.

Currently, in all the cases studied regarding the transformation of land use and built forms, land plots are occupied by large commercial structures with a building-to-land ratio (BTL) ranging from 74% to 90%, while the open area has decreased to between 13% and 25% of the initial stage. In the initial stage, the BTL was on average 20%, but it has now risen to 83% in the current stage (2023), with an average of 17% open area remaining. The reduction in open area signifies a more urbanized area that has experienced significant expansion in built-up space through morphological changes, resulting in a high-density spatial structure. Based on this data, it has been analyzed that the BTL has increased by 75% and the open area has decreased by 79% in these cases, from the initial phase of development to the present.

## **Land Value**

Land value is directly related to the nature of land use. Additionally, the transformation of the economic base of an urban area affects the land value in that location. Changes in land use and economic factors have significantly impacted the land value along the Gombora area. Throughout this transformation, the market price of plots along the Gombora corridor has gradually increased. Currently, with the growing acceptance of commercialization of these plots, there has been a dramatic change in the market price, which is now 5,000,000 per 200m<sup>2</sup> compared to the non-government rate. Notably, the land value of plots along the Gombora corridor has nearly doubled during the evolution of this area. The higher land value at present requires intensive land use to justify its economic worth.

Furthermore, it has been concluded that land use changes may have more flexibility despite governmental policies. Additionally, due to a lack of enforcement and the potential for land use permissions through the space design policy, unregulated growth leads to changes in land use, resulting in an increase in illegal growth. Beyond the Gombora Corridor, land-use changes are occurring throughout the residential neighborhood of Gombora. Many residential land uses are being transformed into commercial use. One significant factor influencing the morphological transformation of the Gombora area is plot size. The majority of people have large plots of land with extra space after building their residences. In terms of accessibility, the function of roads has a substantial influence on land use and holds the highest value index in commercial land use, as profitability is a significant factor driving commercial land-use changes in the study area.

## **Recommendations**

### **The role of Government**

When it comes to planning business locations in residential areas, we should consider both the design of infrastructure and service capacity, as well as population growth demands. Changes in the use of urban space are responsible for issues such as infrastructure strain, insufficient parking, and legal irregularities. The Hossana town municipality and the Council of Local Government will be responsible for helping alleviate these issues by preparing new Integrated Development Plans (IDPs) and Local Area Plans. These strategies will serve as a reference for areas, particularly in land use planning. Additionally, it is important to develop Strategic Spatial Planning, as creating a strategic spatial vision can help address complex geographical challenges and generate new spatial identities. This is intended to maintain a high quality of life, social well-being, and settlement stability in the neighborhood. This study indicates that effective neighborhood income creation requires strong governmental participation, the presence of local development plans, and consideration of the overall socioeconomic status of the population. The government perceives Hosanna as a part of this problem; however, it must receive strong support in the context of neighborhood renewal.

### **Land use transformation and controls**

It is essential for the Hossana town municipality to act as an advisor and share information with institutions that provide services in this area, especially those on the technical committee that handles and approves changes of use. This ensures that these institutions are part of the committee and receive accurate information regarding property applications for change of use, as well as identify complementary and suitable land uses in specific areas.

The suggested system of social control and social awareness, which encourages active involvement in commercial management activities, is a way to improve the quality of life for everyone. More effort should be invested in enhancing the function of community organizations, as the results have shown to be successful. To preserve and protect the excellent quality of norms and social interaction while enhancing the role of the residential sector, it is necessary to retain the community's active involvement in this management issue. A regulatory framework is proposed to enhance the role of local government in controlling commercial areas. They should exercise stricter control and spread awareness of the mechanisms through regulation. In order to meet societal needs and fulfill legal obligations, the instruments and controls should be established correctly. It is important to note that treating the Gombora area with respect and sensitivity is critical in this instance. The Hosanna Municipality has an urgent requirement to conduct frequent field inspections to ensure effective

development management. The Geographical Information System (GIS) is required to update property records for the Hossana Municipality, which have **undergone urban morphological transformation**. This is a great way to facilitate coordination of morphological transformation in the town.

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# Bitcoin Integration in Mauritius: Evaluating Public Perspectives, Challenges, and Potential Disruptions in the Financial Landscape - A Qualitative Study

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## Abstract

Bitcoin is a decentralized electronic currency that may be used everywhere in the world. Peer-to-peer transactions fuel the network, and encryption is employed to confirm the validity of these transactions worldwide. Block chain technology may be used to maintain a public distributed ledger. Generally, the public is entitled to obtain newly created Bitcoins as a reward by participating in a process known as "mining." Investors may also think of it as a feasible investment due to the possible future earnings this cryptocurrency may provide. The goal of this study is to determine if and to what degree Bitcoin can be integrated into Mauritius' financial system since its introductory into the financial system of the market is relatively new. Furthermore, comparatively with other markets in the region, and despite being a desirable platform for mining and investing, Bitcoin poses a challenge to traditional financial institutions and governments. As a result, a qualitative study was conducted to assess the opinions and viewpoints of potential customers with diverse ethnicities and socioeconomic backgrounds are necessary with respect to Bitcoin transactions. The study included respondents who were familiar with both Bitcoin and traditional transaction techniques. The study's findings indicated that Bitcoin has the potential to replace the current monetary system in the future, but only if there is enough awareness, a user-friendly interface, real-world benefits, and efficient risk management.

**Keywords:** Bitcoin, Cryptocurrency, Banking Sector, Customer Knowledge, Customer Use, Customer Benefits, Perceived Risks

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## Introduction

This research is focused with the newly emerging topic of Blockchain technology, which was created by Satoshi Nakamoto to act as the accounting system for the cryptocurrency Bitcoin and has since gained widespread acceptance (2008). Because of the extensive interest in the underlying technology since its inception, a slew of research and articles have been published, as well as increased media attention, which has resulted in considerable enthusiasm among technology enthusiasts. Specifically, according to the Association of Computing Machinery, it is expected that blockchain disrupt any industries on a worldwide scale, as well as redefine financial transformation on a global scale, allowing for secure and rapid, trustworthy, and transparent solutions, due to irreversible nature, transparency, and redefined trust to be created (Underwood, 2016).

As a cryptocurrency, Bitcoin was initially designed with the anonymity of users and the delocalization of transactional activity as its guiding principles (Barber *et al.*, 2012). Following its initial adoption by a small number of inspired followers, bitcoin became widely accepted by the general public, who utilized it for legally structured transactions like as investments and purchase agreements. In tandem with technological advancement has come a rise in the popularity of private digital currencies, which are digital in the sense that they have no physical presence anywhere in the world. Unlike public digital currencies, which have a tangible presence somewhere in the world, private digital currencies do not have such a representation. What is being described here are virtual currencies that have characteristics similar to those of money. In addition to its many other uses, cryptocurrencies serve as a measuring system, a means of trade, and a gauge of worth, among other things. As far as digital currencies are concerned, the ultimate objective is for them to function independently of intermediaries and without the intervention of a centralized issuing body.

Digital currencies, in contrast to traditional currencies, which are issued by a central bank and kept by an institution such as a commercial bank or transmitted through the credit card sector, are established directly by the government and are not held by any institution. Because no third-party intermediary is used, user involvement is handled directly and anonymously between the two parties engaged in the transaction.

(Nakamoto, 2009). Digital currencies have the potential to be used to assist developing economies in overcoming their challenges, according to Grinberg (2011), as a result of these circumstances. Digital currencies represent a significant and radical transformation in the notions of finance and market liberalization, respectively, according to Grinberg (2011). As a consequence of technical improvement, developing nations have been able to bypass the costly and time-consuming installation of cable telephone infrastructure and instead rely on mobile cellphones to communicate with their citizens. Users of the internet are utilizing peer-to-peer digital currencies, which are not controlled by the government, in a manner similar to how traditional financial institutions are being circumvented by users of the internet.

In terms of Mauritius, the Bank of Mauritius has been extremely careful in its strategy to cryptocurrencies thus far; on 18 December 2013, they gave a notice alerting members of the public to proceed with caution and diligence when attempting to deal with cryptocurrencies, and further describing that members of the public should be prepared to cope with unregulated virtual currencies risks, which do not provide the same layer of safety as 'hard' or 'real' money.

This research seeks to offer insight on the road and challenges to Bitcoin and blockchain technology adoption, covering two primary groups of participants: developers and users. It examines the features of perceived ease of use, perceived utility, and perceived risk for each kind of stakeholder and feature of technology by means of the TAM as the analysis framework. It also seeks to investigate the difficulties that may arise in the introduction of Bitcoins in the Mauritius financial system. This study also seeks to address what is the present level of Bitcoin comprehension among potential end users; How does the quantity of information influence one's opinion on Bitcoins?; lastly what are the key factors that influence a person's likelihood of adopting Bitcoins?

## **Literature Review**

An examination of the literature serves as the foundation for the discussion of Bitcoins. Blockchain technology, which was first introduced in 2009, is a means for establishing a secure, peer-to-peer network for the transmission of digital currency. It is still in use in the modern era. Bitcoin, the world's first and most widely used cryptocurrency, is helping to the demolition of long-established and unchangeable financial payment systems that have been in place for decades. Traditional fiat money will not be replaced by cryptocurrencies, but the Internet-connected global financial markets may be able to alter the way cryptocurrencies interact with one another by reducing barriers such as those linked with traditional currencies and exchange rates. Bitcoin and other cryptocurrencies have the ability to completely change digital trading platforms by eliminating transaction costs.

According to Baratt (2012), contrary to popular belief, Bitcoin has been linked to criminal web trade sites such as Silk Road. However, fundamental nature of such technology is intended for creating instead of undermining confidence. According to Kaplanov (2012) Despite the fact that the participants in the transaction are unknown to one another, the present operation, like with all cryptocurrencies transactions, is visible to adherents of such platform since it is recorded on the Bitcoin blockchain. Nakamoto (2008) said this method ensures the validity and provenance of the bitcoins in circulation.

The public blockchain will allow users track out where the bitcoins came from and how they were transferred if one is a computer scientist who is competent of doing so, and this will be open to everyone. For Brito & Castillo (2013), Bitcoin, contrary to common assumption, is not a viable option for the transfer of unlawfully obtained funds, at least not at this time. When it comes to money laundering, private bank networks are preferred over public bank networks, according to the FBI (Brito, 2015; Singh, 2015).

## **Cryptocurrency in Mauritius**

As of late, Mauritius has been promoting itself as a "regional sanctuary" for cryptocurrency revolution, which the country sees as one of the technologies offering promising new opportunities throughout Africa and the globe. A public distributed ledger called blockchain is crucial to this study since it is widely recognised as bitcoin's main technical accomplishment. To further its goal of establishing Mauritius as a start-up center point for this technology, the government has supported many subsidies with an eye on expanding their operations

across Africa, Asia, and beyond. It follows the BOI's recent introduction of the Regulatory Sandbox License ("RSL"). The government and private institutions of Mauritius have taken different approaches to the rise of cryptocurrencies like bitcoin. To be sure, the BOM has met some of the central banks overseas in warning the population about the dangers of utilising cryptocurrency like bitcoin.

According to the BOM's notification, users of virtual currencies as a payment or investment method are not protected by any regulations. But the SBM has chosen a very different tack than the BOM has when it comes to cryptocurrency and the blockchain. The SALT (Secured Automated Lending Technology) lending platform accepts Bitcoin and Ethereum as collateral, and in 2017 the SBM publicized its goal to work with the Fintech company SALT. Because of this, blockchain assets may be used as security for small business loans.

This move is in line with the country's vision of becoming a "breeding ground" for blockchain businesses by creating a "Ethereum Island," which would serve as a testing ground for new blockchain technologies and a gateway to emerging markets in Africa and Asia. The island nation of Mauritius hopes to become a "major player" in the blockchain industry. The topic of this research paper is crucial because it will allow for the creation of an appropriate regulatory framework for blockchain technology, cryptocurrencies, and bitcoins in Mauritius.

It is well known that cryptocurrencies like bitcoin are not regulated by any legislation in Mauritius at the current time. The FSC and the BOI, among other financial regulators, need to draught industry-specific fintech laws. The adoption of such regulations is essential if we are to solve issues like asset opacity, taxation, and anti-money laundering, while also bolstering the security of the blockchain and cryptocurrency communities at large.

The International Coordination Agency for Crime Prevention is worried that the use of bitcoin and other cryptocurrencies could lead to an increase in criminal activity and drug trafficking in Mauritius. For instance, the Mauritius Securities Act of 2005 does not consider cryptocurrencies to be "securities," hence it does not apply to them ("MSA- 2005"). Investors may be put off by the lack of regulation in Mauritius regarding this emerging form of fundraising due to the rising popularity of virtual currencies. Foreign investors who are interested in the country's potential in the area of blockchain technology are hampered by the absence of an appropriate regulatory framework.

However, blockchain technology start-up businesses who are aiming to expand into the African and Asian markets are drawn to Mauritius because of its commitment to improving its regulatory system. The regulatory structure of Mauritius now prohibits the use of cryptocurrencies. Our laws and regulations, for instance, need to be updated to make room for stakeholders who make investments inland that deal with digital currencies like bitcoin. As a result, the Government of Mauritius has announced the establishment of a new regulatory board, the Regulatory Committee on Fintech and Innovation-driven Financial Services ("the Committee"), with the mission of "paving the way for appropriate regulatory frameworks for encouraging and supporting Fintech development in Mauritius."

### **Technology Acceptance Model (TAM)**

For the purpose of fulfilling this research, this study adopts a qualitative method inspired by Davis' (1989) Technology Acceptance Model (TAM). Despite the growing excitement for technology, particularly in a challenging economic situation, how well-prepared people are for the challenges of the next generation remain unclear. If a technical breakthrough is to be completely realized, it is critical that society is fully incorporated with that achievement, especially if it is of social importance. Davis (1989) made the TAM as a way to figure out how well a proposed computer or information system would work for a certain group of people. The Theory of Reasoned Action, which tried to explain why people buy things, was first put forward by Fishbein and Ajzen (1975). Scholars have paid a lot of attention to TAM as a powerful tool for analysing the social aspects of technology adoption.

### **Perceived Usefulness (PU)**

Conventional wisdom says that a person's subjective opinion of a technology's ability to improve job performance affects the user's final decision to use the technology through a middleman called "perceived



utility" (PU). People are more likely to use a programme if they think it will help them get their jobs done faster and easier. The most important of these is how useful something is thought to be (Davis, 1989). According to the concept of perceived usefulness, a system is helpful if the user sees a positive link between how it works and how it makes them feel (Davis, 1989). One possible definition of perceived usefulness (PU) is "the degree to which a person thinks that using a certain technology will help him or her do a better job." Because there weren't many applications for end users.

### **Perceived Ease of Use (PEU)**

The perceived ease of use (PEU) is someone's impression of how intuitive a technology is, which in turn affects how likely that person is to use that technology." Even if people could see how useful a piece of software is, they might decide that it's not worth the time it would take to learn how to use it. That is, people think that, in addition to usefulness, perceived ease of use has an effect (Davis, 1989). If a user thinks that an app is easier to use than its competitors, they are more likely to use it. "Easy" is defined in the dictionary as "free from difficulty or major effort" (Davis, 1989). Last but not least, PEU can be thought of as "how much a person thinks it would be easy to use a certain system." (Davis, 1989). Using PEU, it is possible to get a very accurate picture of how users accept and use new technologies.

### **Perceived Risk (PR)**

The deployment of Blockchain-based applications (BBA) have certain parallels, since they involve the transfer of value across an unprotected, digital, and global network. As risk is an inherent part of electronic commerce, it must be included in any Blockchain study. Many, but not all, subsequent studies of risk perception have relied on Bauer's (1960) identification of uncertainty and consequences as key structural elements of risk. He stressed that he cared only about perceived risk and not actual danger. Therefore, public relations may be described as follows: "Perceived risk in consumer behavior involves risk in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which at least are likely to be unpleasant."(Bauer, 1960). For Bensaou & Venkatraman (1996), there are two types of inherent uncertainty: behavioural and environmental uncertainty Risk is either technologically-driven or relational according to Ring & Van De Ven (1994). The distributed and anonymous structure of Blockchain's value transactions may raise red flags among e users, despite the technology's promise of a safe and transparent network. Pavlou (2003) identified instances of product deception, fake identity demonstrations, data breaches, deceptive advertising, and warranty rejections are all instances of behavioural risks from the perspective of the final consumer.

### **Level of Knowledge (LK)**

According to Hackeett (2017) there is "no more hyped and less understood concept" and Valenzuela (2015) further said that knowledge or education is one of the most important aspects of adopting new technologies. The TAM uses self-reported variables like PU, PEU, and PR. Pavlou (2003) suggested adding "Trust" as a mediator. "Level of Knowledge" seems more important than trust in a blockchain setting and was as such used. Those who are knowledgeable with Blockchain are euphoric about the technology, while those who aren't are sceptical.

### **Resilience and the intention to adopt Bitcoin (BTC)**

Researchers have studied resilience for two decades. Macdonald *et al.* (2018), Scholten *et al.* (2019), Stevenson & Busby (2015) came forward to say that businesses can benefit from help anticipating, preparing for, responding to, and recovering from disruptions of all kinds. Wamba *et al.* (2020) and also Sternberg *et al.* (2020) claimed that Blockchain Technology (BCT) shortens data-driven choices to heighten and restructure operational procedures and resources, as well as information sharing and collaboration between many stakeholders to prevent operational failures and increase service reliability. By keeping an eye on potential dangers and formulating a strategy, businesses can change quickly and effectively to Volatility, Uncertainty, Complexity and Ambiguity conditions according to Millar *et al.* (2018). For Rubbio *et al.* (2019) the influence of resilience on desire to use BCT has never been demonstrated and experimentally explored, despite resilience's importance in all circumstances.

## Methodology

Primary data were collected to come with concrete and significant information to address the research questions. Due to its features and exploratory nature, qualitative research was selected as the optimal methodology for this investigation. When studying a new or poorly understood phenomena, Eriksson and Kovalainen (2008, pp. 5-6) argue that qualitative research approaches are particularly useful. The authors also note that the goal of this study is best served by using qualitative research methods because of their emphasis on obtaining in-depth knowledge of a phenomena and its underlying causal links. This study analyse the spread of blockchain technology in the banking industry using semi-structured interviews. It was decided that semi-structured interviews, which are frequently used in qualitative research, were the best technique of research and data collecting for this study.

Kotler and Keller (2006) said the research design's goal is to ensure the data can be utilised to solve the problem statement. "Research design" refers to rules for performing studies using various approaches. TAM was used to assess BBA adoption in Mauritius' banking system (Technology Acceptance Model). Despite TAM provided mainly quantitative outputs, it is not uncommon that it is used to attain informative data. By applying qualitative methods with the TAM, underlying motives, perceptions and definitions that each participant has can be explored fully. The target population were bank employees in Mauritius who serve as the primary point of contact for the study. Primary sources were used for data collection. When a researcher obtains primary data, it comes through first-hand interactions with the people or communities being studied according to Saunders, *et al.* (2012). This means that the researcher goes straight to the information source and gets data for a given research endeavour. Interviews, direct observation, and surveys are examples of primary data collection methods. Simply said, secondary data are those that have been obtained previously but not by the user (Saunders, *et al.*, 2012). Qualitative research data was utilised to analyse the outcome of the conducted investigation. This strategy is deemed acceptable, as it will allow us to learn all there is to about the topic under investigation.

## Interview

Data gathering is as vital as research. Yin (2009) defined six information sources: interviews, direct observation, participant observation, physical objects, and recordings. Interviews were chosen because they reveal respondents' perspectives, ideas, and beliefs better than surveys. According to Bryman & Bell (2001), interviews are employed to collect qualitative data because they allow for in-depth participant descriptions. This method rapidly and successfully gathers information. Gray (2009) says interviews are difficult due of the high amount of involvement between interviewer and responder. Due to poorly written questions or unhelpful prompts, researchers might misinterpret informant responses or acquire erroneous data.

Organized, semi-structured, or unstructured interviews are available. Semi- structured interviews at the intermediate level may overcome these problems. This kind of interviewing uses a list of subjects and questions, but the details vary. Five interviews yielded five data sets during week of July over the phone. According to Langdrige (2007) said the interview guide is important. Interview guides should elicit as much relevant information as possible to address the research question. The interview guide was organised to include straightforward, relevant answers. A data analysis interview schedule was implemented in the study. The objective was to use current theories to determine the best qualitative analytic approach for this topic. Interview transcription was the analytic process since it permitted familiarisation with the information.

Ethical research aims to preserve the welfare of study participants by ensuring they are not exposed to risks or bad consequences from research techniques. Ethics considerations were considered while acquiring the data form the interviewees. Obtaining the participants' informed consent means they were provided enough information about the research's goals and the interview's purpose. Respondents' anonymity and identities were not compromised since they were not asked for their names in the interview transcripts.

## Findings

The general profile of the five respondents was basically the same; they are all evolving in the banking sector at higher level of management where some also provide investment activities. Interview 1, has more than 20 years of experience in the banking sector and has an managerial role. He has been involved in business processes and strategic services. He studied finance and over 20 years in investment management. Interviewee 2, has 15 years' experience as project lead after more than 10 years in IT programming in banking sector. He has a master in engineering. Interviewee 3, is an experience IT engineer who has several professional qualifications from international institution. Interviewee 4, has 19 years of experience, comprising 3 years in fraud monitoring, 10 years in custodian activities and having a degree in business management with financial risk as specialization. Interview 5, is an IT specialist who studied IT in India, has a Master degree in software engineering and coding.

Following the invitation to interview, the respondents were who all interviewed using the same questions related to set themes which focused on analysing the initial variables, PU, PEU, PR, IU and LK:

They have further been questioned as to what were their definition, perception and what they thought could be the attributed of bitcoin and how knowledge could impact its successfully integration in Mauritius. This part provided unbiased, filter-free responses. Going about the level of knowledge part, they all agreed to some extent that Bitcoin adoption requires a deep documentation and preparation in order to go forward a successful implementation.

"I personally learned about it through a friend. But if I did not make the effort to learn more, to be curious I would not have been able to answer you today. Identically, if the BoM successfully launched the digital currency, which will be mostly present in custodian service, and having investors not willing to deal with digital currency at all, what would have been the use of all this? It can definitely be a very good way to trade but if you are anchored in your traditions, not willing to learn, adapt and follow then, there is no way you can survive technological innovations." Interviewee 5

"I personally believe that if none of us if take the risk to share what we really know on the subject, we will never know where we stand, what needs to learn or what needs to be worked upon for us, as bankers to be fully equipped to adopt this technology." Interviewee 2

## Perceived usefulness

Respondents to the interview agreed that the banking sector stands to gain significantly from using blockchain technology. Some of the identified benefits have been demonstrated to be possible, while others are only theoretical and in the early stages of development. It has been determined that the key drivers driving the adoption of blockchain technology are the capacity to store and distribute trustable and verifiable data in a computational form between entities, and the digitization of completing transactions and contracts. These were also considered crucial in deciding the success of blockchains.

Increasing productivity through automation, swift transactions, and low overhead costs was cited as a major advantage. Financial processes are often sophisticated transactions based on the formation of agreements and the execution of contracts between transacting parties. Furthermore, they frequently necessitate the engagement of multiple businesses and intermediaries. This complicates and hinders the entire execution of various procedures, as well as raising transactional expenses. All of the interviewees, however, agreed that blockchain technology may improve the efficiency of completing transactions and contracts and relocating assets.

"Using blockchain technology helps us when we manage a hub in a network that only stores information about our clients. Then, we may safely and effectively share the information throughout the network to carry out the agreements and transactions that have been made."

Interviewee 1

"Harmonically labelled information with blockchains boosts efficiency and simplifies various operations Blockchains have the potential to improve efficiency through reliability and openness." Interviewee 2

“All sorts of intricate tasks can be performed in a less complicated fashion. Increased effectiveness in value transfer processes is the potential of cryptographic technology and trust chains.” Interviewee 3

"Blockchain technology is a mean toward cost reduction. You see, it eliminates intermediaries which are required in the traditional processes as we know it in Mauritius. Transfers are executed with less efforts and more rapidly." Interviewee 4

"There is an ease in innovation. When we look at other countries, Mauritius is still lagging behind on many points. The usefulness in integrating such technology are that execution of transfers are of high speed, there is disintermediation and more control over one's own money." Interviewee 5

### **Perceived ease of use**

Interviewees have been questioned on how far they can define BTC and BCT as easy to ease. Interviewees 2,3 and 5 all agreed that Bitcoin requires less permission. The original software was an opened-sourced one; they stated it is an easy-to-use interface.

“It is very easy to use at least from my point of view. It takes another sense when it comes to developing BBAs.” Interviewee 3

“Available documentations on Bitcoin mechanism makes it a basic thing to understand and use. For banks, we need lot of permissions, a load of programing to synchronise several interrelated applications. Bitcoin however, has no such barriers.” Interviewee 5

Interviewees 1 and 4 however raised another important aspect to the question of the ease of use; the adaptation within the banks when time for change will come.

"Indeed, we are talking about innovating and going a step ahead in the Mauritian Banking landscape. But do you think it will be that easy firstly for employees who have been working for years in a way and to suddenly stop and change? It will be the same for many customers as well. The learning stage might be long and costly for banks." Interviewee 1

"It can be implemented here in Mauritius and in banks but not at every level. Some departments must still continue in the traditional way. Look at the trading activities, it will never be as easy as it can be with such technology. The difficulty can reside in the way how newly transformed departments such a custody or the Payments department, will easily switch from the old way of doing to the new one." Interviewee 4

### **Perceived risk**

When talking about perceived risk, interviewees pointed out the increased security. A great deal of trust is necessary for the provision of financial services and products, and substantial amounts of reliable data are routinely exchanged between parties in order to forge bonds of understanding and carry out dealings. As a result, safe and trustworthy distributed networks such as blockchains are extremely valuable to the banking sector. They make it possible to conduct digitally signed transactions and contracts that can be validated by all nodes in the network.

Moreover, the implementation of such transactions and contracts may be monitored closely because of tracking and accessibility. The end result is a more secure and risk-free design.

“By using digital and cryptographic signatures, we have a legally binding contract that we can monitor in real time, allowing us to evaluate the risks involved and take appropriate action.” Interviewee 1

One of the benefits of blockchain technology, according to Interviewee 1, is that it is resilient since there is no central point of failure. Intermediary financial institutions and organisations routinely play a key role in the execution of transactions and contracts that span many systems. In the case that the network supporting the execution of transactions and contracts is centralised, there is a high probability of failure. However, because a

decentralised network has several nodes, the danger of failure is reduced. As a result, resilience is an advantage that leads to robustness and enhanced availability of financial services.

"In contrast to having a failing centralised service, we can now continue to do business even if one or two nodes fail. This is an advantage made feasible by decentralisation." Interviewee 1

Interviewee 1 further said that blockchain technology has increased knowledge of the potential ways in which various financial sector activities might be carried out and introduced new ways of doing business. They also said that this change in outlook is helpful to the development of the financial industry since it facilitates the delivery of novel solutions to persistent problems. As a result, the financial industry as a whole works together to identify methods to make systems more reliable and secure.

"This new style of working together promotes open-mindedness [...]. This shift will aid us in moving forward." Interviewee 1

### **Intention of use**

The interviewees have been questioned on their intention to use BTC/BCT. Since it is not yet implemented for the moment and none of them is directly dealing with it, their answers have shed the light on what according to them could influence the adoption of bitcoin in banks. It is noticed that the intention of use is linked to the infrastructure support, security and regulatory frameworks mostly.

"IT infrastructure, including hardware, software, and network systems, is especially important for Bitcoin's success since it allows different Bitcoin systems to communicate and function together. Public or/vs. private concerns might arise with regards to technological matters including interoperability, data security, design, and permissions. Strengthening Bitcoin's underlying technology requires a focus on privacy and experience." Interviewee 2

"The widespread adoption of innovative technologies like bitcoin depends in large part on their security. Hacking and modifying on a peer-to-peer basis places a premium on the research, development, and design of decentralised operating systems. Advanced technical solutions should be employed to secure user systems (financial) to avoid breaches resulting to loss of money and to build stronger consumer trust, all of which would help spread the word about bitcoin and boost its adoption." Interviewee 5

### **Factors affecting the adoption of bitcoin in Mauritius**

The respondents have further been questioned as to what were their perception on the factors which could affect the implementation of such technology in Mauritius. Their responses provided an array of aspects. Interviewee 1 conceded that the regulatory framework could represent a major point.

Their responses provided an array of aspects. Interviewee 1 conceded that the regulatory framework could represent a major point.

"Yes, we have heard that the government is seeking to go forward to more digitalization, mainly the digital currency. But none of us have heard more about the regulations, how it will work, who will work on in and who will be regulating that is barely known to many of us. It still represents a risk if proper documentation and guidelines are not created and shared to all the stakeholders." Interviewee 1

Another factor identified unanimously was the lack of knowledge itself. All interviewees said that if one is not acquainted or even not willing to learn what it is all about, there is no way this could be a successful innovation.

"When talking in the adoption in banking sector, the less attractive part is that users, once educated on Bitcoin, will be able to handle the transactions themselves. Banks will find themselves losing revenues generated from transactional related services." Interviewee 3

The professionals who were questioned stated that it is difficult to locate skilled developers of decentralised architecture that possess the necessary competence and are up to date with current trends. In addition, even if these competent engineers could be found, it would be difficult and expensive to get them to participate in activities linked to blockchain technology.

This is because of the industry's complexity and the fierce rivalry within it. This will remain true regardless of where they are on the planet. According to the second and fifth interviews, the configurations and designs of blockchains that are appropriate to the financial industry have only been developed to a very limited level up until this point. This is still true even though blockchain technology has been available for a while.

In addition to this, they made the observation that after the initial presentation, the manufacturing stage of the process is reached by a limited number of networks only. As a direct consequence of this fact, it is very feasible that discovering and constructing decentralised architecture will be a challenging endeavour. It has been shown that there is a barrier in the form of a lack of awareness and information regarding blockchain technology; hence, there is a necessity for increased understanding and knowledge regarding this technology.

### **Discussion and Conclusion**

The participants in this interview were unanimous in their belief that the potential benefits given by blockchain technology outweighed the risks inherent in the process. While some of the benefits that were mentioned have been shown to be beneficial in practise, others are still in the conceptual and experimental stages of development at this point. The capacity to carry out transactions and contracts digitally, as well as the capability to store and move trustworthy and verifiable data across organisations in a computational manner, are some of the drivers that are propelling the use of blockchain technology.

Additionally, the ability to conduct transactions and contracts digitally opens up the possibility of new business models. It was also anticipated that the degree to which these factors would affect the practicability of blockchains would vary greatly. The findings indicate that the potential influence that blockchain technology might have on the financial industry of Mauritius should not be understated. Based on the interviews, it seems that the banking business in Mauritius has a greater influence, both positively and negatively, on the banking industry in other countries.

Due to an insufficient number of pertinent replies, the survey was severely flawed in several respects. Only a small fraction of respondents had information on how the TAM framework has been used to the study of blockchain technology's uptake.

The descriptive analysis revealed that most respondents do not have enough knowledge on BBAs and/or BTC. The respondents of the survey also believe that their implementation are negatively affected by the lack of knowledge and their associated risks mainly. Though there are still sight of huge benefits for the banking industry in Mauritius, there are threats through the uncertainties represented in the regulations and legal aspects of the technology itself. It is time for great changes in the Mauritian banking industry. Despite the speed with which BBAs deliver services, respondents are more trusting in banks when conducting financial transactions.

BBAs and BTCs have an influence on the Mauritian banking business, both positively and negatively. In terms of the positive effect, the banking sector is improving their services and offering clients with more efficient communication and contact. However, the negative consequences mostly include security breaches in banks. The negative consequences also include a lack of well-equipped followers if the technology is to be adopted quickly.

### **Addressing Research Questions**

One might conclude that the revised TAM model was a valid tool for gauging people's openness to new forms of technology. The drivers of "Level of Knowledge," "Perceived Ease of Use," "Perceived Usefulness," and "Perceived Risk" have been shown to accurately predict the anticipated use and, therefore, the adoption of

Blockchain. The constructions utilised to make predictions about future use were solid, and every research question tested out to be.

The answer to the issue of whether banks are prepared for the impending Blockchain revolution was slightly positive, and this could be highly due to the developmental stage of this technology in the local market, hence not widely accepted yet. Even when looking at a highly educated sample group, there remains a significant knowledge gap. As it turns out, financial institutions do not seem to be ready. This is consistent with the literature, which often draws parallels between the present level of Blockchain development and adoption and the early days of the Internet. Banks may be at a disadvantage in terms of real adoption of Blockchain-based applications due to a lack of understanding. Regulators and corporations may use this lack of understanding to their advantage, limiting and privatising Blockchains at the expense of citizens' economic and social well-being.

The research is useful for gaining insight into the kind of individuals who will be impacted by the Blockchain technology breakthrough and how to approach them. Based on a consumer-centric framework, the research pinpointed four key features that should form the backbone of any Blockchain deployment. If customers were to use the technology, lowering their anxiety about it is of paramount importance.

The variable labelled "Perceived Risk" had the greatest effect in foretelling adoption. A reduction in perceived danger and an increase in acceptability might result from education on security features and a growth of trust in the technology and supplier. Educative advertising might be used as a strategy to reinforce such effects by increasing broad levels of knowledge. Banks may boost Blockchain's perceived utility and simplicity of use among prospective consumers by creating applicable real-world applications, which will aid society in understanding the scale and socio-economic potential of Blockchain and establishing acceptability.

Blockchain is predicted to be one of the next major technical revolutions, alongside the Internet, personal computers, and smart phones, according to literature. In order to ensure the long-term viability of their business, bankers and related authorities should keep abreast of the latest technical developments.

A significant gap was observed in terms of banks perspective and degree of understanding among bankers. Through the TAM, we were able to provide a better picture of banks' present level of understanding, perception, and anticipated usage of Blockchain while also filling in part of the gap. Despite Blockchain's infancy and the participants' mixed levels of familiarity with the technology, this model has been shown to be valid and trustworthy.

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# **A Comparative Study of the Effect of Two Composted Organic Fertilizers of Water Hyacinth on the Growth of Chinese Mustard (*Brassica juncea*)**

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## **Abstract**

The objective of this work is to study the effect of water hyacinth compost with effective microorganisms (EM) and water hyacinth compost with water on the growth of Chinese mustard (*Brassica juncea*). In this work, two types of organic fertilizers were applied in cultivation. Composted organic fertilizer 1 (COF 1) contains water hyacinth and an effective microorganism solution, and composted organic fertilizer 2 (COF 2) contains water hyacinth and water. The physicochemical properties of composted organic fertilizers were qualitatively and quantitatively characterized by conventional methods and other modern techniques. The moisture content of COF 1 is lower than the moisture content of COF 2, and the pH value of COF 2 (7.96) is higher than the pH value of COF 1 (7.91). The content of C-H is high in both COF 1 and COF 2. The higher contents of potassium, phosphorus, and nitrogen were found in COF 1 than in COF 2. The content of sulfur and magnesium was higher in COF 2 than in COF 1. According to the data, the nutrients in COF 1 are greater than those in COF 2. After that, a field experiment was carried out to determine the effects of the composted organic fertilizers. In all treatments, these fertilizers were used at the same rate when cultivating Chinese mustard (*Brassica juncea*). Growth rates of plant height and leaf sizes of Chinese mustard were measured using two composted organic fertilizers. Field studies showed that the cultivar with COF 1 had a higher growth rate of Chinese mustard than the cultivar with COF 2. The results of this work indicated that composting using effective microorganisms (EM) is a safe and simple way of improving the effectiveness and output of a composting system.

**Keywords:** effective microorganisms (EM), composted organic fertilizers, NPK content, Chinese mustard

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## **Introduction**

There are two kinds of fertilizer: chemical and organic. Both restore the same vital nutrients to the soil, but in different ways. While organic fertilizer is made of naturally occurring organic materials, chemical fertilizer is manufactured, and its nutrients are synthesized in a factory. Although chemical fertilizers improve the growth of plants and increase the yields of fruits and vegetables in a relatively short period of time, there are certain disadvantages to using chemical fertilizers (Smithson and Griller, 2002). The overuse of chemical fertilizers can lead to soil acidification because of a decrease in organic matter in the soil. Nowadays, farmers in developed countries use organic fertilizers because they are renewable, biodegradable, sustainable, and environmentally friendly. Organic fertilizers are fertilizers derived from animal matter, animal excreta (manure), human excreta, and vegetable matter (e.g., compost and crop residues). The most common are plant-based organic fertilizers, animal-based organic fertilizers, and mineral-based organic fertilizers. Plant-based organic fertilizers break down quicker than other organic fertilizers. These materials help to add drainage and moisture retention to poor soils. Animal-based organic fertilizers, such as manure, bone meal, or blood meal, add lots of nitrogen to the soil. Mineral-based organic fertilizers can add nutrients to the soil as well as balance the pH level (Weltzein, 1989).

## **Composting**

Composting is the biological decomposition of organic waste, such as food or plant material, by bacteria, fungi, worms, and other organisms. The result of composting is an accumulation of partially decayed organic matter called humus, known as compost, which is a good fertilizer for plants. At the simplest level, the process of composting requires making a heap of wet organic matter and waiting for the materials to break down into humus after a period of months. Composting is a naturally occurring process of decomposition found in nature. Composting with effective microorganisms (EM) has some advantages.

## Effective Microorganisms (EM)

Effective microorganisms (EM) are mixed cultures of beneficial naturally occurring organisms that can be applied as inoculants to increase the microbial diversity of the soil ecosystem. Effective Microorganisms (EM) is a people-friendly and environmentally safe product of EMRO (EM Research Organization) that achieves synergistic effects by combining beneficial microorganisms that exist in nature, such as lactic acid bacteria, yeast, and phototrophic bacteria. There is evidence that effective microorganism (EM) inoculation of soil can improve the quality of soil, plant growth, and yield (Kengo and Hui-lian, 2000). Effective microorganism (EM) solution is used in agriculture in multiple ways. It is used in compost to increase soil fertility, and it serves pest and weed control. EM can be used in both aerobic and anaerobic composting systems and has many advantages over traditional composting. Effective microorganisms (EM) enhance the activities of beneficial indigenous microorganisms. Effective microorganisms (EM) also promote germination, growth, flowering, fruiting, and ripening in crop plants. Effective microorganisms (EM) enhance the photosynthetic capacity of plants. Effective microorganisms (EM) develop the internal immunity of plants, thus enhancing natural resistance.

### The Purpose of this Study

The purpose of this paper is to study the effect of composted organic fertilizers prepared from plants (water hyacinth) on the growth of Chinese mustard. Two types of composted organic fertilizers are prepared from water hyacinth by using an effective microorganism (EM) solution and water.

### Research Methodology

#### Sample Collection

Water hyacinth used in this work was collected from Yangon City Development Committee (YCDC) drainage system, South Okkalapa Township, Yangon Region, Myanmar. Effective microorganisms (EM) and molasses were collected from Myay Patethar Island, Yangon Region, Myanmar.

#### Sample Preparation and Analysis

First of all, collected water hyacinth plants were prepared to be put into two composting boxes. In one composting box, prepared water hyacinth and effective microorganisms (EM) solution were used, and in another box, prepared water hyacinth and water were used. After 60 days, the composts were ready to use and were kept in an airtight container. Raw material (water hyacinth) and two composted organic fertilizers were qualitatively and quantitatively characterized by conventional methods and other modern techniques. The field experiments were conducted at the field in Thuwanna football stadium compound, Thingangyun Township, Yangon Region, Myanmar. The growth rate of Chinese mustard were taken every 5 days after transplanting.

### Results and Discussion

#### Some Physicochemical Properties of Raw Material (Water Hyacinth) and Composted Organic Fertilizers

The pH value and the moisture content of raw material (water hyacinth) and composted organic fertilizers are characterized by conventional methods. The pH value and the moisture content of the raw material are the highest. The pH value of COF 2 (7.96) is higher than the pH value of COF 1 (7.91). The moisture content of COF 1 is lower than the moisture content of COF 2.

Most finished compost generally has a pH between 6 and 8 (Montoya, et al., 2013). According to the data from Table 1, the pH values of two composted organic fertilizers are consistent with the pH value range of the most finished compost.

Table 1: Some Physicochemical Properties of Raw Material (Water Hyacinth) and Composted Organic Fertilizers

Parameters	Raw Material	COF 1	COF 2
Moisture (%)	9.90	76.19	87.89
pH	8.0	7.91	7.96

### Macro- and Micronutrients of Raw Material (Water Hyacinth) and Composted Organic Fertilizers

Nutrients of raw material (water hyacinth) composted organic fertilizers are characterized by conventional methods and other modern techniques at the Department of Agriculture, Land Use Division, Myanmar. Raw material was found to contain nitrogen (3.810%), phosphorus (2.440%), potassium (4.380%), calcium (2.490%), and magnesium (1.240%).

A sufficient amount of macro- and micronutrients were present in both composted organic fertilizers. The total nitrogen content of COF 1 (1.085%) was higher than the total nitrogen content of COF 2 (0.525%). The total phosphorus content of COF 1 (2.900%) was higher than the total phosphorus content of COF 2 (2.700%). The total potassium content of COF 1 (7.200%) was higher than the total potassium content of COF 2 (5.640%). The macro- and micronutrient content of COF 1 is higher than that of COF 2. The macro- and micronutrient content of raw material and composted organic fertilizers are shown in Table 2 and Figure 1.

Table 2: Macro- and Micronutrients of Raw Material (Water Hyacinth) and Composted Organic Fertilizers

Macro- and Micronutrients	Raw Material (%)	COF 1 (%)	COF 2 (%)
<b>Total Nitrogen (N)</b>	3.810	1.085	0.525
<b>Total Phosphorus (P<sub>2</sub>O<sub>5</sub>)</b>	2.440	2.900	2.700
<b>Total Potassium (K<sub>2</sub>O)</b>	4.380	7.200	5.640
<b>Total Calcium (Ca)</b>	2.490	3.046	2.405
<b>Total Magnesium (Mg)</b>	1.240	1.361	0.972

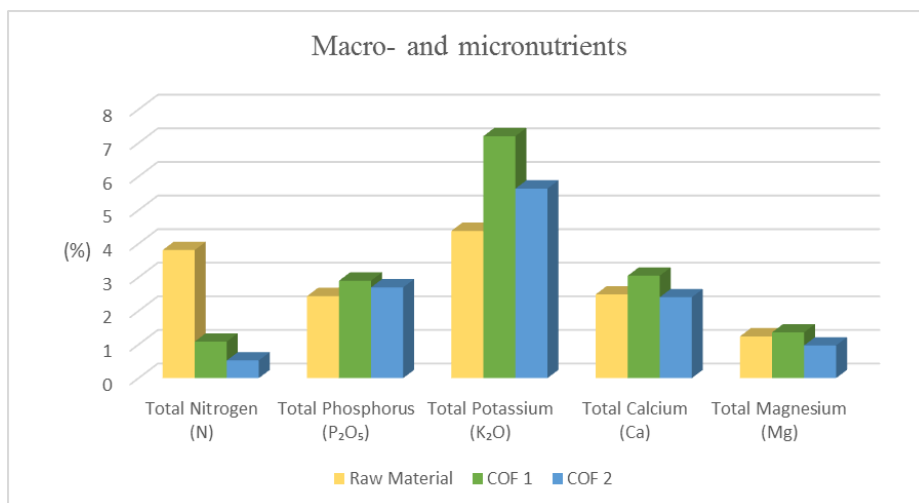


Figure 1: Histogram of macro- and micronutrients of composted organic fertilizers

### Relative Abundance of Elements in Raw Material (Water Hyacinth) and Composted Organic Fertilizers

The content of potassium, calcium, phosphorus, sulphur, iron, zinc, manganese, and copper in raw material and composted organic fertilizers are shown by the EDXRF spectra represented in Table 3 and Figures 2, 3, and 4. The relative abundance of elements in raw material was found to be in the range of K > Cl > Ca > Si > P > S, etc.

The relative abundance of elements in two composted organic fertilizers were found to be in the range of K > Ca > S > P > Fe > Mn, etc. The content of C-H is high in both COF 1 and COF 2. Both two composted

organic fertilizers contain essential nutrients that are required by plants for growth, development, and reproduction.

Table 3: Relative Abundance of Elements in Raw Material (Water Hyacinth) and Composted Organic Fertilizers by EDXRF

Elements	Relative Abundance (%)		
	Raw Material	COF 1	COF 2
<b>K</b>	2.508	0.661	0.609
<b>Cl</b>	2.159	-	-
<b>Ca</b>	0.922	0.190	0.172
<b>Si</b>	0.576	-	-
<b>P</b>	0.418	0.089	0.083
<b>S</b>	0.301	0.064	0.116
<b>Fe</b>	0.061	0.021	0.025
<b>Mn</b>	0.021	0.005	0.005
<b>Ba</b>	0.017	-	-
<b>Zn</b>	0.002	0.001	0.001
<b>Cu</b>	0.002	0.002	0.001
<b>Ti</b>	-	0.002	0.002
<b>Sr</b>	0.001	0.001	0.001
<b>Br</b>	0.001	0.001	0.001
<b>Cr</b>	0.001	-	-
<b>C H</b>	93.009	98.961	98.984

Raw Material = water hyacinth

COF 1 = composted organic fertilizer 1 (water hyacinth + EM)

COF 2 = composted organic fertilizer 2 (water hyacinth + water)

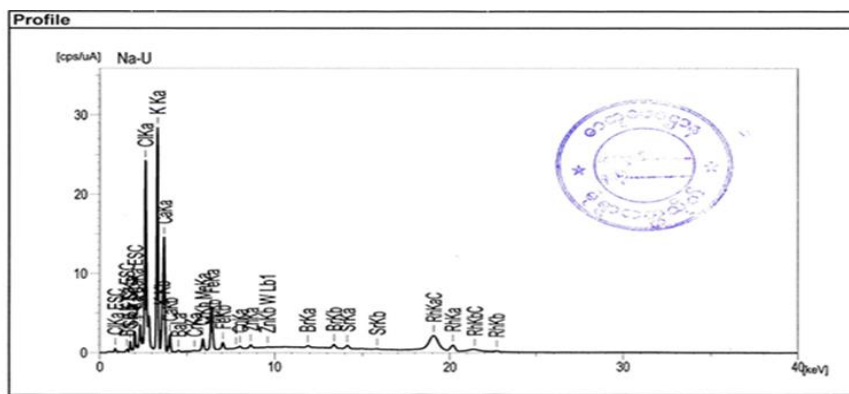


Figure 2: EDXRF spectrum of water hyacinth (*Eichhornia crassipes*)

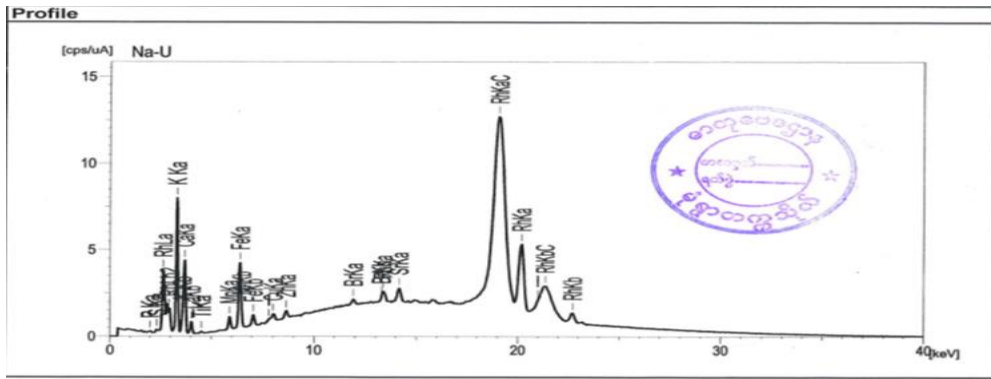


Figure 3: EDXRF spectrum of composted organic fertilizer with effective microorganisms (EM) solution

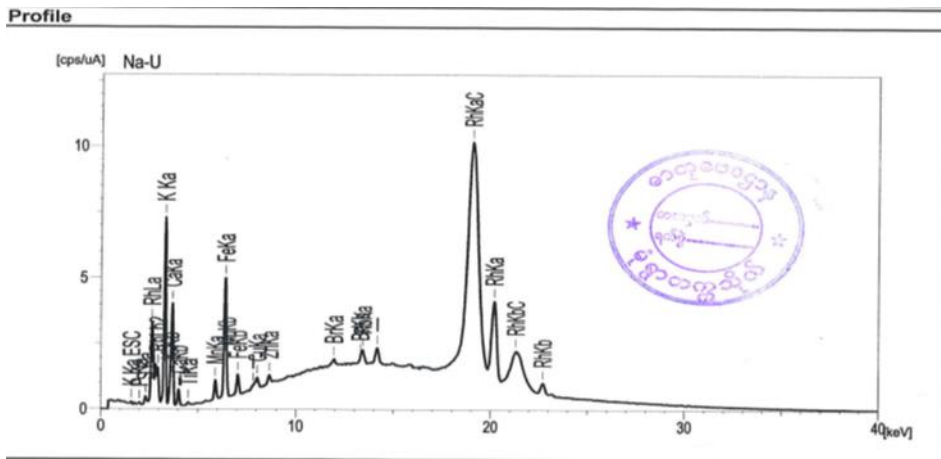


Figure 4: EDXRF spectrum of composted organic fertilizer with water

#### Effect of Composted Organic Fertilizers on the of Chinese Mustard (*Brassica Juncea*)

The field experiments on cultivating Chinese mustard with two composted organic fertilizers are shown in Figure 5. The effect of composted organic fertilizers on the growth of Chinese mustard (*Brassica juncea*) is shown in Table 4 and Figures 6, 7, and 8. From the time of transplanting to the harvested time, the time frame was 25 days. Plant growth increased along with the increasing age of the plant. The growth of plant heights and leaves sizes were measured at a five-day interval. Plant height, leaf length, and width in T 1 are greater than in T 2. The growth rate of T 1 was higher than that of T 2.

Both T 1 and T 2 can produce good growth rates in plants. But plants in T 1 are healthier than those in T 2. According to the data from field experiments, composting with effective microorganisms (EM) can get a better result than composting without effective microorganisms (EM). By adding effective microorganisms (EM) to composting, it can enhance nutrient uptake and add more nutrients to the soil and plants.



T 1 (5 days)



T 2 (5 days)



T 1 (10 days)



T 2 (10 days)



T 1 (15 days)



T 2 (15 days)



T 1 (20 days)



T 2 (20 days)



T 1 (25 days)



T 2 (25 days)

Figure 5: Cultivating Chinese Mustard with Two Composted Organic Fertilizers



T 1



T 2

Figure 6: Plant height of Chinese mustard 25 days after transplanting



T 1



T 2

Figure 7: Leaf length of Chinese mustard 25 days after transplanting



T 1



T 2

Figure 8: Leaf width of Chinese mustard 25 days after transplanting

Table 4: Effect of Composted Organic Fertilizers on the Growth of Chinese Mustard (*Brassica Juncea*)

Time (days)	Plant Height (cm)		Leaf Length (cm)		Leaf Width (cm)	
	T 1	T 2	T 1	T 2	T 1	T 2
0	8.0	8.0	7.0	7.0	2.5	2.5
5	15.5	14.6	14.4	13.5	4.0	3.5
10	18.2	17.4	17.0	16.8	6.2	6.0
15	23.1	22.5	22.4	20.0	8.1	7.7
20	36.5	32.0	30.0	27.0	11.5	10.5
25	44.0	40.0	37.0	33.0	12.5	12.0

T 1 = Soil treated with COF 1, water hyacinth + EM

T 2 = Soil treated with COF 2, water hyacinth + water

#### Encouraging Local Farmers to Compost

Agriculture plays a vital role in all countries because of the increasing population. Therefore, the farmers need to use fertilizers to fulfill the food supply. Both chemical fertilizer and organic fertilizer restore the same vital nutrients to the soil, but in different ways. Chemical fertilizer can increase crop production in a short time; it costs less and is readily available in large quantities. Organic fertilizer improves the structure of the soil and increases its ability to hold water and nutrients. Organic fertilizer is the ultimate slow-release fertilizer, so it reduces nutrient loss. The weak point of organic fertilizer is that it is expensive to produce, and only available in small quantities. Farmers choose chemical fertilizers over organic fertilizers because of their cost and quick absorption. However, using chemical fertilizers can cause a lot of pollution in our environment.

In Myanmar, some farmers have also started to use organic fertilizers. On the other hand, most farmers in Myanmar cannot afford the cost of organic fertilizer. The easiest and least expensive way to make organic fertilizer is composting. However, composting is not very popular among farmers in Myanmar. The level of knowledge and attitude about composted organic fertilizers needs to improve among farmers. And also the practice of making and using composted organic fertilizers. Composting can be done with different kinds of plant parts, kitchen waste, and water. An effective microorganism (EM) solution should be used instead of water to make composted organic fertilizer more effective. Effective microorganism (EM) solutions accelerate the decomposition of organic waste and compost. So, the period of composting is shorter than that of normal composting. As a consequence, farmers can increase crop production by using organic fertilizer, preventing soil erosion, chemical leaching, and other pollution caused by chemical fertilizer, and reducing organic waste.

#### Conclusion

Organic compost fertilizers are rich in macro- and micronutrients that are essential for plants. When they are added to the soil, they release these nutrients slowly. So plants can get available nutrients whenever they need them. They can also improve the structure and texture of the soil and help balance the pH of the soil. In addition, composting with organic waste materials such as leaves, straw, kitchen waste, etc. can reduce waste. From experimental results, the physicochemical properties of composted organic fertilizers were found to be suitable for plant growth and soil fertility. Field studies showed that COF 1 was able to produce a higher growth rate of Chinese mustard than COF 2. From the results, it can be concluded that composting with effective microorganisms (EM) enhances the growth of Chinese mustard. Composting using effective microorganisms (EM) saves energy and the work force. It is easy to handle and available at a low cost. Summing up, effective microorganisms (EM) create the value of added compost. It will give a more complete breakdown of organic matter in compost and a higher quality. Moreover, it can accelerate the composting process and reduce odor during composting.

This means composting with effective microorganisms (EM) can give plants a higher growth index and, therefore, a better growth rate. The aim of this research work is to raise the knowledge of local farmers about how to make composted organic fertilizer with organic waste that is easily obtained and their attitude toward using composted organic fertilizer in farming.



## **Acknowledgement**

I would like to express my special thanks to the Rector and Pro-rectors of Yangon University of Education for encouraging this paper. I am grateful to Dr. Ni Ni Than, Professor and Head, Department of Chemistry, Yangon University, Yangon Region, Myanmar, for her invaluable guidance, supervision, and permission to use all of the departmental facilities. Finally, I wish to thank my colleagues from Department of Chemistry, Yangon University of Education who have directly and indirectly contributed to the support of this research paper.

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# Factors Influencing the Individuals Investment Decisions in Jaffna District Thin Lae Lae Hlaing, Nay Mar Soe

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## Abstract

Investment decisions of each individuals are directly connected with the economic and GDP growth of the country. Most of the developing countries are getting the reasonable portion of its investment from the domestic individuals' investments. Developing countries like Sri Lanka Individuals investments are mainly contributing for the economic growth and development. As per the Central Bank of Sri Lanka Economic and Social Statistics 2020 individuals' deposits in Commercial Bank in the form of time & saving deposits is showing in 2019 as Rs 4,019,411 million compared to the value in 2015 as Rs 2,618,366 Million. Mixed method research designed will be used for the study. The sample consist with 100 individuals selected randomly in the Jaffna district for this study purpose. Primary data will be collected through distributed questionnaires among selected individuals randomly. The study was conducted to test the relationship among the factors and how these factors are influencing the individual investor decisions. Current context the individual's investment decisions are affected by several factors namely risk of the investment, gender, age, occupation, education etc. are being main factors influencing individual investment decision. Currently risk taking in investment are increasing in the Jaffna district. The result of this risk taking is reflecting in the growth of the stock market investment even though the economic is showing the decreasing the growth. Also, the individual's investment in private sectors are growing is evidenced through the increased finance company long term deposit base.

**Key Words:** Investment, Investors, factors, return, decisions

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## Introduction

Individuals will invest their surplus money in any form of investment based on their risk-taking capacity. Investment decision and risk factors having a positive relationship. The investor is the decision maker where they have to decide the type of the return expected by them. If the individual expecting risk free return the investment choices will difference compared to the investor who is expecting the high return with the high risk. The investor who prefers for the risk-free return will choose the investment in government secured documents like treasury bills, treasury bonds, fixed deposits in government banks etc. this type of investors will get the risk-free return where as the rate of return is very low. The other type of the investors who prefer to get the high return for their investment will prefer to invest in high risk investments like stock markets, finance company, private banks etc. These investments will bring high rate of return within short period of time. But the risk of these investments is very high. Investment like stock market is being the highest return giving investment instrument. Same time investor may lose the entire investment when the expected return goes negative. Therefore, the decision of investment is purely made by the investor based on their expected level of return and risk. There are many factors which directly or indirectly, influence the individual investment decisions. The factors chosen for the analysis are capital Appreciation, tax benefit, expected return, liquidity, risk minimization, financial security. The study attempts to find out influences of demographical profile on the factors influencing investment decision. The results proved that factors of selection of investment varies according to gender, age, occupation, usage of internet, level of computer knowledge, usage of online trading (S. Hemalatha, 2019). The main objective of the investor is to maximize the return for their investment. The return maximization will occur when the investor increases the investment risk. The risk taking can be determine the investor based on the previous records of the particular investment, past experience, expected future activities of the investing entities, expert advice etc. while considering the above factors if an investor make the investment decision they can maximize the return for their investment while minimize the risk of the investment. The wrong decision of the investment will lead the investor to lose the invested capital and return. Therefore, investment decision should carry out while doing the careful analysis of the risk and return of the investment.

## Research Problem

There are many investment decisions are made by the investors after careful analysis of the risk and return of that investment. Recently world richest person Elon Musk has bought the twitter while paying US \$ 44 billion. This investment had been made after careful analysis the investor intention on the investment, return on the investment and risk of the investment. Also, the investment decision took more than 6 months to conclude the comes to the conclusion stage of this investment. However, when an individual makes an investment decision, they will look only few factors like risk of the investment, previous return patters, period of investment, available data's and some expert advices. With this minimum details' individuals will make their investment decision. But as the investment decisions of each and every one is mainly changing based on the expected level of return with the level of risk they are going to take. The research is going identify the factors influencing the individual's investment decision in Jaffna district. As per the Thomas C. Chiang and Yuanqing Zhang 2018 it was found that significant evidence to support the positive risk-return relation depending on the sources of risk. Most of the indivial are interested in investing their excess income in order to maximize their wealth. When they are planning their investment there are number of factors influencing their investment decision. If an investor considers these factors properly and do the investment the return gained by the investor will be high. If any investors failed to consider the influencing factors they will end up with less return or loss for their investment. There are number of factors playing major role on investment decision. Mainly risk of investment, expected return, expected return period, amount of investment etc. if an investor analyses these factors properly the return from the investment will be high for the investors. But most of the instances it was proved that Jaffna district individuals are investing in a risk free investment instruments and getting minimum return for their investment. Specially most of the individuals only investing in government bank fixed deposit. But they were not aware that the return received from the government banks are not as per the market rate. Also most of the individuals not aware about the other investments opportunities like stock markets, debentures, treasury bills, treasury bond, equity investment, mutual fund investment etc. Due to the lack of knowledge about the investment and not ready to accept the risk the individual investors in the Jaffna district are losing high amount of return for their investment.

## Research Question

Based on the above research problems following research question has been accomplished to fulfill the requirement of the study.

- What are the factors influencing the individual's investment decisions while they try to maximize the return for their investment?

## Objective of study

The study was carried out to address the following objectives; General Objective: - What are the factors influence the individual's investment decisions. Specific Objective: - Identify the relationship between the investor return and influencing factors while maximizing the return.

## Literature review

There are several factors have influence in the individual's investment decisions. Most of the individuals are considering these factors before making their investment decisions. Those who are giving priority for these factors are getting better return for their investment than others. The following studies are reviewed for this research purpose. As per S. Hemalatha, (2019) there are many factors which directly or indirectly, influence the individual investment decisions. Ramanujam and Chitradevi, (2012) found that socioeconomic variables viz., age, gender, income, education and occupation make significant impact while deciding on the investment patterns for investment. Kabra *et.al*, (2010) found that investor's age and gender affected their risk taking capacity. Saugat Das et al, (2014) found that demographic variables such as age, gender, education, occupation plays a very important role in investment decision. Manoj Kumar Dash, (2010) found that demographical factors like age, income, occupation influences the investment pattern of the individual. Thulasipriya, (2015) identified that Tax benefit, security & safety, high returns, liquidity are the major factors considered by

investors before investing. Sevilyay USLU Divanoglu & Dr. Haşim Bağci, (2018) found individual investors' personal and social situations, investment preferences and level of knowledge and general factors (state policies, economic stability, income levels & experience) affect investment decisions. Hoffmann, Post and Pennings, (2013) identified individual investors continue to actively trade but do not risk investment portfolios during the crisis. Thomas C. Chiang and Yuanqing Zhang, (2018) finds a positive relation between stock return and intertemporal downside risk, while controlling for sentiment and liquidity. Aregbeyen & Mbadiugha, (2011) found the individual investment decisions are affected by economic and behavioral factors and demographic factors. Aisha Farooq, (2015) found the use of financial tools and Firm level corporate governance have positive and significant Impact on investment decision making, whereas Risk aversion has negative and significant impact on investment decision making. Moreover, all behavioral factors, firm level corporate and investment decision making have positive and significant relationship with each other. Kahenman & Tverseky, (1979) & Waveru, Munyoki & uliana, (2008) show that decisions of investors affected by behavioral, emotional and psychological factors.

### **Methodology**

This study attempted to investigate the factors affecting the investment decision of individuals in Jaffna district. Jaffna district has been selected for this study purpose since this is the city has high amount of investment but most of the investors prefer only risk-free investment instruments. The researcher will select 100 individuals randomly from different part of the Jaffna district and get their feedback for this study purpose. The study relied on primary data which were collect through questionnaires.

### **Hypotheses of the study**

In this study return of investment is the dependent variable while factors affecting the investment decisions are independent variables. Accordingly, risk of the investment, expected amount of the investment, time period of the investment, liquidity capacity of the investment, security of the investment and non-financial benefits from the investment had been identified as independent variable.

### **Data Analysis**

The correlation matrix, the risk of the investment, expected amount of the investment, time period of the investment, liquidity capacity of the investment, security of the investment and non-financial benefits are ( $r = 0.619^{**}$ ,  $P < 0.01$ ), ( $r = 0.619^{**}$ ,  $P < 0.01$ ), ( $r = 0.666^{**}$ ,  $P < 0.01$ ), ( $r = 0.672^{**}$ ,  $P < 0.01$ ), ( $r = 0.639^{**}$ ,  $P < 0.01$ ) and ( $r = 0.676^{**}$ ,  $P < 0.01$ ) have a significant relationship with return of investment at 99% confidence level. And the regression coefficient ( $\beta$ ) is 0.688 ( $P < 0.05$ ) which indicates expected amount of the investment, time period of the investment, liquidity capacity of the investment, security of the investment and non-financial benefits has a significant impact return of investment at 95% confidence level. Since the adjusted R<sup>2</sup> value is 0.547 which represents 54.7% of total variance in return of investment is described by risk of the investment, expected amount of the investment, time period of the investment, liquidity capacity of the investment, security of the investment and non-financial benefits and the remaining 45.3% of variability is explained by other factors rather than return of investment. Here, F value is 240.997 ( $P = 0.000$ ) which reveals that this regression model is more applicable for the study.

### **Conclusion and Recommendation**

The results highly collaborate with the previous findings of Moore, (2003); Mahfund, (2012); Tabiani and Mahdzan, (2012); Aren and Aydemir, (2014); Jariwala, (2015); Fachrudin and Fachrudin, 2016; Putri and Henny, 2017 and Hamza and Arif, 2019. The study results also support empirical findings of return of investment provide better expertise in performing investment decisions (Lusardi and Mitchell, 2011; Becchetti, Caiazza, & Coviello, 2013; Van Rooij, Lusardi, & Alessie, 2011). The study findings have provided relevant and more insight understandings related to investment decisions, it is important to focus on the limitations of the study. Firstly, the study used a small sample, which restricts the generalization of the findings to the whole population. Besides, the sample was obtained from individual investors in Jaffna district. Future research should pay more attention to increase the sample size and improve the representatives of the sample. Findings of the study demonstrate that 55.9% variance in the investment decision is explained by return of investment ( $R^2 =$

0.559), the remaining 44.1% of the variance in the investment decision is explained by other factors rather than return of investment. Hence, the study recognizes that there are other areas which need to be explored regarding investment decisions of individual investors. Future research should consider conducting some other qualitative methods to collect the data for exploring the level of return of investment of investors. Investors will better understand the question but they may provide the desired answer instead of actual intention. Therefore, it is suggested to conduct observational research which can give more insights to return of investment and investment decisions

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## Corporate Governance and Performance of Listed Companies in Mauritius

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### Abstract

The aim of this research paper is to analyze the determinants of corporate governance practices that have been adopted in listed companies in Mauritius and to assess the relationship between the corporate governance practices on the performance of listed companies in Mauritius as investors' are mainly concerned with corporate performance and Corporate Governance is mainly concerned with the structure and mechanisms through which companies are managed and controlled to ensure corporate stability. Web based data gathering technique which examines 120 annual reports of a total of 12 companies from 2012 to 2021. From each report, information about three corporate governance variables as well as the two dependent variables have been used to form a balanced panel data. Data collected were then analyzed using Stata version 11.

**Keywords:** Corporate Governance, Corporate Performance, Listed Companies, Corporate Governance Practices.

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### Introduction

Corporate Governance (CG) can be defined as the process of how organizations are directed and managed (Cadbury, 1992). It encompasses a structure for effectively organizing, conducting, and overseeing a business in order to achieve long-term objectives, meet the expectations of all stakeholders, and adhere to legal and regulatory requirements. The manner in which CG and company performance are interrelated has been a matter of ongoing discussion and investigation, due to a range of economic reforms and differing economic histories, including regional market crises and the prevalence of large corporations (Arora and Sharma, 2016). The inability of poor CG to prevent business failures has shed light on the need for improvement in governance practices. Companies with inadequate governance systems are more susceptible to accounting fraud, highlighting the crucial role that CG plays in preventing such incidents.

Mauritius is not an exemption from corporate scandals. Many successful listed firms collapse for various reasons, including poor CG. The country has witnessed the scandal of several listed companies, for instance, MCB Group Limited, due to poor CG practices. Furthermore, there is a lack of proper balance of gender diversity in the boards of directors. There is a problem of gender inequality in such listed companies in Mauritius, although board diversity is among the vital determinants of CG practices. Compared to the Code of 2004, the 2016 Code is notably different in that its guiding principles are much shorter, more approachable, and simple to understand. It also has a custom-made concept that is simple to use and reflects current global trends. The Code is generally required of all businesses that fall under the "Public Interest Entities category." The question is how much CG standards aid the board's ability to detect fraud. Indeed, given how businesses worldwide were affected by the financial crisis in the years prior, it would appear that the Code cannot be implemented based on voluntary compliance. Hence, the objectives of this research paper are as follows:

- To analyze the determinants of CG practices adopted in Mauritius' listed enterprises
- To assess the relationship of the determinants of CG practices on the performance of Mauritius' listed enterprises
- To offer suggestions and recommendations to Mauritius' listed enterprises that the integration of CG practices can enhance their performance.

The rest of the paper is organized as follows: Section 2 provides a review of literature on the relationship of CG and performance of listed companies. Section 3 elaborates on the research methodology that has been adopted

in this study, while Section 4 provides the results and analysis. This paper ends with conclusion and recommendations.

## **Literature Review**

As stated by Arora and Sharma (2016), CG is difficult to define because the subject's boundaries are always increasing. Definitions change depending on the context, the cultural context, and the viewpoints of other academics. According to Rezaee (2009) CG stands for the checks system and balances that is shaped by various legal requirements, regulatory guidelines, market forces, industry standards, and the actions of those involved in CG such as company executives, legal advisors, financial consultants, and board members. Its goal is to maximize long-term shareholder value while taking into account the needs and concerns of all other parties involved. In other words, CG is a tool for guiding businesses toward the objectives for which they were established (Vallabhaneni, 2013).

Alchian and Demsetz (1972) were the pioneers in the area of agency theory, with their work later being developed further by Jensen and Meckling in 1976. Jensen and Meckling (1976) assert that the principal-agent concept refers to a contractual arrangement between two parties where one party, the parent delegated some decision-making power to the agent and hired them to operate on their behalf. This implies that the principal is mandated to appoint managers to perform services as agents for them, conduct organization's operations, and make critical decisions on their behalf.

Quite the opposite of agency theory, stewardship theory represents another management model whereby managers are perceived to be good stewards who will benefit the owners. The stewardship theory has its origins in social psychology and focuses on the actions of executives. This theory views the behavior of a steward as being supportive of the organization and collective, rather than selfish. The steward's actions align with the organizations' interests as they aim to meet its objectives. According to Hendry (2002), granting power to the board leads to improved company performance as executives' work towards the company's best interests. In essence, stewardship theory centres around non-financial motives in managerial activities, such as the desire for success and recognition and the satisfaction derived from working ethically. In contrast, agency theory emphasizes economic factors and financial motivations as the foundation of corporate governance. Zabri *et al.* (2016) stated that where the share of money of the shareholders is being optimized, the steward's usefulness also is being optimized. It is because the achievement of the company will provide more prerequisites, and the stewards will therefore have a clear mission.

## **The determinants of CG practices**

- **Board Size**

The Board of Directors holds an imperative role within a company. Therefore, Boone *et al.* (2007) underlined that the directors' position and responsibilities are to ensure that the organizational performance is in line with the legal structure. According to Cheng (2008) who pointed out that, a smaller board size is more efficient for supervising the management. This is so because communication appears to be more effective on a small board than on the bigger one. However, there exists a combination of outcomes of the board size, whereby Sun *et al.* (2010) affirmed that there is a kind of complexity involved when decision-making within a larger board size.

- **Board Independence**

Kathy *et al.* (2012) noted that all public traded firms should have a significantly large proportion of non-executive and independent directors that will ensure that the board takes the proper decisions regarding the responsibilities, tasks and duties of others. On the contrary, Bonn (2004) pointed out that the term board independence will allow the board to enhance the effectiveness and efficiency of the organisation's overall performance. In accordance with the research of Donnelly and Mulcahy (2008), the directors outside the company can better monitor the board's independence, contributing to the organizations' financial position.

- **Board Diversity**

Gender diversity has demonstrated an important role in the organization board (Adams and Ferreira, 2004). Daily *et al.* (2003) suggested that due to the number of women who participated more on boards, distinctive work experience is added to cater for these needs on the board. To support this fact, Barako and Brown (2008) pointed out that women's contribution results in better organisational communication. On the same note, Lipman and Lipman (2006) claimed that there is a direct and positive relationship between women's contribution and the benefits to the society as a whole. On the other hand, Rupley *et al.* (2012) also identified a direct link between the proportion of women on board and environmental disclosure. Therefore, the researchers pointed out that as directors on board, women have an important role in maintaining a good reputation of the organization; they are considered honest, hard workers and always work for the company's benefit and to achieve their goals in their life.

### **Empirical Review- Company Performance**

The connection between CG mechanisms and company performance has been widely studied.

- **Board Size and Company Performance**

Yermack (1996) conducted first empirical research on board size and company performance. He analysed 452 large US firms from the year 1984 to 1991. The research showed that there is an indirect relationship between board size and Tobin's Q (TQ). Previous studies, such as Eisenberg *et al.* (1998), have discovered that there is a negative link between the size of a board and a company's performance. In contrast, studies by Kajola (2008) and Jackling and Johl (2009) have demonstrated a positive correlation between the success of major firms and the size of their boards as determined by Return on Assets (ROA) and TQ. Adam and Mehran (2012) found a favorable relationship between board size and success in the US banking industry as assessed by TQ. There is a significant correlation between board size and business performance the result of Zahra and Pearce (1989) and Kiel and Nicholson (2003). Using Ordinary Least Squares (OLS) regression, Arora and Sharma (2016) discovered that more cognitive depth is associated with bigger boards, which enhances the decision-making mechanism as well as ultimately boosts the organization's effectiveness.

- **Board Independence and Company Performance**

Numerous studies have investigated how board independence affects business performance, and some have suggested that having more independent directors may have either a beneficial or negative influence. Ebrahim's study in 2012, which analyzed 136 listed companies in Kuwait for the year 2009, discovered that the ROA dropped as the percentage of board members who were independent rose. While some studies have found that a higher number of independent directors can negatively impact performance, such as in Ebrahim's (2012) study of 136 listed Kuwaiti companies, others have found a positive impact. For instance, Muller (2014) discovered that in the top 100 biggest and most actively traded companies listed on the London Stock Exchange, there was a strong and significant positive association between board independence and ROA. Through their OLS model, Arora and Sharma (2016) discovered a negative association between board independence and business performance.

- **Board Diversity and Company Performance**

Carter *et al.* (2003) found that having a more diverse gender composition on the board can enhance board independence by bringing different perspectives and decision-making approaches. The study also observed a positive effect on company performance by examining 1000 companies. Similar findings were made by Andreas and Loannis (2017), who investigated how corporate governance procedures affected the performance of Greek banks. They found that gender diversity had a favorable effect. On the other hand, due to a low representation of women on boards, Fauzi and Locke (2012) discovered a negative association between board diversity and corporate performance in New Zealand. Sanan's (2016) research demonstrated that the inclusion of women on boards in male-dominated companies can result in better firm performance. The study, which



looked at 148 registered Indian companies over a five-year period, discovered a favorable correlation between the number of female members on the board and the company's performance as shown by the ROA. The study used regression models with fixed effects (FE) and OLS to come to these conclusions.

### Research Methodology

Quantitative research was chosen as the best method for this study because it involves statistical testing of the collected data. In this study, the population of interest is made up of companies displayed on the Official Market of the Stock Exchange of Mauritius (SEM). This population comprises 25 companies from the Investments, Banks & Insurance, Other Finance, and Commerce sectors. For this research, a random quota sampling was used to

select 12 companies based on their sectoral classification, as depicted in Table 3.1 below.

Table 1: Number of companies

Sector	Total number of companies	Sample
Investments	13	8
Banks, insurance and other finance	7	2
Commerce	5	2
<b>Total</b>	<b>25</b>	<b>12</b>
<b>Total (panel of 10 years)</b>		<b>120</b>

Secondary data were acquired by reviewing the annual reports of 12 companies on the SEM from the year 2012 to the year 2021 through a Web-based data gathering technique, which examines 120 annual reports. Building on this, the panel data is also used for the analysis section. The panel data provides great freedom by merging the time series and the cross-section data. Hence, both secondary and panel data were employed for the purpose of this research. It is thus worth indicating that Stata version 11 is the statistical tool employed for the tests.

The independent variables in this study are factors that have been used to determine the companies' corporate governance. These factors include board size (total number of directors), board independence (Number of Independent Directors / Total number of Directors) and board diversity (Number of Female Directors / Total number of Directors). On the other hand, the dependent variables are ROA (Net profit before interest and tax / Total assets) and ROE (Net profit before interest and tax / Total equity),

The following hypotheses have been formulated:

$H_1$ : The size of a company's board of directors has a significant impact on the company's ROA.

$H_2$ : The size of a company's board of directors has a significant effect on the company's ROE.

$H_3$ : There is a relationship between Board Independence and ROA

$H_4$ : There is a relationship between Board Independence and ROE

$H_5$ : There is a relationship between Board Diversity and ROA

$H_6$ : There is a relationship between Board Diversity and ROE

The least squares equation has been used as follows:

**Firm Performance (FP) = f (board size, board committee, board independence, board diversity and director ownership)**

**Equation 1**

$ROA_{nt} = \beta_0 + \beta_1(BSIZE)_{nt} + \beta_2(BCOMM)_{nt} + \beta_3(BIND)_{nt} + \beta_4(BDIV)_{nt} + \beta_5(DOWNER)_{nt} + \mu_{nt}$

**Equation 2**

$ROE_{nt} = \beta_0 + \beta_1(BSIZE)_{nt} + \beta_2(BCOMM)_{nt} + \beta_3(BIND)_{nt} + \beta_4(BDIV)_{nt} + \beta_5(DOWNER)_{nt} + \mu_{nt}$

**Equation 3**

$TQ_{nt} = \beta_0 + \beta_1(BSIZE)_{nt} + \beta_2(BCOMM)_{nt} + \beta_3(BIND)_{nt} + \beta_4(BDIV)_{nt} + \beta_5(DOWNER)_{nt} + \mu_{nt}$

In addition, a fixed effect model was considered as it enables the unwatched variables to connect with the watched variables. A random effects model was also used as it provided accurate estimates of the coefficients and the lowest standard errors. After conducting the Pooled OLS method, it is important to perform a fixed and random effects test to identify the most suitable model for further analysis in this study. The Hausman Specification Test and the Breusch and Pagan Lagrangian Multiplier Test were employed to determine the best model among the Pooled OLS, the Fixed Effect model, and the Random Effect model.

The Breusch and Pagan Lagrangian Multiplier Test was performed as a supplementary examination to determine whether the random effect model is more suitable than the Pooled OLS model. This test was conducted to select the appropriate model between the Pooled OLS and the random effect regression for further analysis in this study.

## Results and Analysis

The data used for this study consisted of 120 observations from 12 companies over ten years. Table 2 summarizes the statistical details of the 120 observations for three dependent variables and five independent variables.

Table 2: Summary Descriptive Statistics

Variable		Mean	Standard Deviation	Minimum	Maximum
Dependent Variable	ROA	0.0379	0.0668	-0.0941	0.4764
	ROE	0.0414	0.0652	-0.1073	0.3403
Independent Variable	Board Size	9.7167	1.7353	6	12
	Board Independence	0.1490	0.0908	0	0.2727
	Board Diversity	0.1460	0.0971	0	0.3636

The board size with the highest members considered 12 directors while the lowest consisted of 6 directors; as it can be seen that among the 12 companies considered in the sample as per table 4.1, the average size of the board was ten during these ten years. However, it cannot be said that the board size is too large. Large firms must have larger boards and vice-versa. Also, board size has the maximum mean average of 9.7167 with a standard deviation of + 1.7353. This indicates that board size plays an important role with regard to corporate governance practice among the 12 sampled listed companies.

The level of board independence, represented by the proportion of independent non-executive directors (INEDs), varied from 0% to 27%, as indicated by the descriptive statistics. The mean was 15%, meaning that, on average, these listed companies had a board that consisted of 15% INEDs, with executive directors making up 85%. This means that there are more inside directors than outside directors, but a higher representation of outside directors on the board would improve independence and ensure a proper distribution of responsibilities.

The mean percentage of women serving on the boards of the sampled listed companies was found to be 14%. Some companies in the sample were observed to have no female representation, with a minimum value of 0. On the other hand, some companies had 36% female representation and 64% male representation. The standard deviation of 11% is lower than the mean value, showing a limited variation in the representation of women on boards. However, having a greater number of women on boards can bring a range of skills and perspectives not found in all-male boards, leading to more diverse discussions in the boardroom. Moreover, board diversity has the least mean of 0.1460, with a standard deviation of 0.0971. Hence, board diversity has a limited role in the CG concept.

With a mean of 0.0379 and a standard deviation of +0.0668, ROA has the lowest mean. Since the mean for ROA is less than 50%, this relates to the fact that ROA least contributes to corporate governance practice

among the 12 sampled listed companies. During the ten years, the maximum ROA amounted to 0.47%, and the minimum ROA amounted to -0.0941. The dependent variable with the highest mean is Tobin's Q. The mean value of 0.7842 and a standard deviation of +0.6153 for Tobin's Q indicate that the sample of 12 companies, on average, fluctuate around 0.6153 around the mean.

The results of the correlation analysis, which aimed to examine the relationship between corporate governance variables and measures of firm performance for the 12 sampled listed companies, are summarized in Table 4.2. ROA and ROE are positively and highly correlated with a correlation coefficient of 0.7659. As a result, ROA for the 12 listed companies is highly influenced by ROE.

Table 3: Correlation Analysis

VARIABLE	ROA	ROE	Board Size	Board Independence	Board Diversity
ROA	1				
ROE	0.7659	1			
Tobin's Q	0.1851	0.2389			
Board Size	-0.1681	-0.0697	1		
Board Independence	-0.1497	-0.1781	-0.0041	1	
Board Diversity	0.0101	-0.0642	-0.7117	-0.0088	1

Board size has a negative value of -0.1681 with a ROA and negative value of -0.0697 ROE, while board size has a positive value of 0.2673 with Tobin's Q, which is used to measure the performance of companies. This means that an increase in the board size will lead to a fall in ROA and ROE also and vice-versa, that is, there is an inverse relationship between the two. Board independence is negatively correlated with ROA and ROE, as shown in Table 4.2. Hence, the weak negative correlation between board independence and board size may be due to the lack of independence given to outside directors.

ROA is negatively correlated with Board Size and Board independence, that is, -0.1681 and -0.1497, board independence inversely influences ROE among the 12 listed companies. Hence, correlation analysis is used to assess whether there is multicollinearity among two or more independent variables. A level of multicollinearity lower than 0.8 is considered acceptable, and the results of the analysis in the table show that all values are below that threshold. Therefore, it can be concluded that there is no multicollinearity issue among the variables.

Table 4 provides the results for Pooled OLS for the Models, as shown in Table 4.3. Results for Pooled OLS indicate that the p-value for each Model is lower than 5%. Therefore, all the Models are significant and help explain corporate governance's effect on financial performance for the 12 sampled listed companies. Among the explanatory variables, three variables, namely board size, board independence, board diversity have a negative sign.

Table 4: Pooled OLS

VARIABLE	MODEL1- ROA	MODEL2- ROE
Board Size	-0.0203 (-3.13) [0.002] ***	-0.0161 (-2.53) [0.013] **
Board Independence	-0.1391 (-2.03) [0.044] **	-0.1624 (-2.42) [0.017] **
Board Diversity	-0.1717 (-1.93) [0.056] *	-0.1737 (-1.99) [0.049] **

<b>CONSTANT</b>	0.2414 (3.59) [0.000] ***	0.2065 (3.13) [0.002] ***
<b>F (5,114)</b>	2.77	2.57
<b>PROB &gt; F</b>	0.0211**	0.0303**
<b>R- SQUARED</b>	0.1084	0.1014
<b>ADJ R-SQUARED</b>	0.0693	0.0620
<b>ROOT MSE</b>	0.06446	0.0632

The result of the pooled OLS from Table 4.3 indicates that Model 1 has an F-statistics of 2.77. Model 1-ROA has a p-value of less than 5%, indicating that the model is significant. This means that there is sufficient evidence to suggest that there is a relationship between ROA and the three corporate governance independent variables for the 12 sampled listed companies. From the  $R^2$  of 0.1084 for Model 1, it can be concluded that ROA explains about 10.84% of variations in Model 1.

Model 2 has a  $R^2$  of 0.1014, it can be concluded that ROE explains about 10.14% of variations in the Model. The coefficient of 0.21 for the constant term and a p-value of 0.002 (0.2%) less than 0.05 (5%) means that Model 2 is considered significant. If the three independent variables are kept constant in Model 2, a one-unit increase in the constant term will increase by 0.21 in the overall model.

Among the negative coefficients, the variable for board diversity has the highest significant effect as this variable has a p-value lower than 5%. Consequently, by holding the constant term and the remaining two independent variables are constant, a unit increase in board diversity will decrease Model 2 by 0.01. The negative coefficient of -0.0161 for board size implies that if the constant term and the other four independent variables are held constant, a unit increase in board size will lead to a decrease of 0.02 in the overall Model. An overview of the results of the fixed effect test is given in Table 5.

Table 5: Fixed Effect Model

<b>VARIABLE</b>	<b>MODEL 1- ROA</b>	<b>MODEL2- ROE</b>
<b>Board Size</b>	0.1309 (0.21) [0.832]	0.1482 (0.24) [0.807]
<b>Board Independence</b>	6.3878 (0.20) [0.838]	7.1361 (0.23) [0.816]
<b>Board Diversity</b>	0.0524 (0.20) [0.840]	0.0431 (0.17) [0.866]
<b>CONSTANT</b>	-2.2863 (-0.22) [0.828]	-2.5946 (-0.25) [0.602]
<b>F (5,103)</b>	0.08	0.14
<b>PROB &gt; F</b>	0.9948	0.9823
<b>R SQUARED</b>	0.0295	0.0273

Results of the fixed effect test in Table 5 shows that Model 1 has a F-statistics of 0.08 but a p-value of 0.9948 and an  $R^2$  of 0.0295. Therefore, Model 1 is insignificant, and it can be concluded that under the fixed effect, the variation in Model 1 is poorly captured by the five corporate governance variables for the 12 sampled listed companies. Despite the fact that Model 2 has an F- statistic of 0.14 and a  $R^2$  of 0.0273, Model 2 has a p-value higher than 5%. Therefore, Model 2 is insignificant and can be concluded that under the fixed effect, the

variation in Model 2 is poorly captured by the five corporate governance variables for the 12 sampled listed companies.

The results of the random effect, which seeks to explain the lack of a correlation between the dependent and five explanatory factors, are shown in Table 6.

Table 6: Random Effect Model

VARIABLE	MODEL 1- ROA	MODEL2- ROE
<b>Board Size</b>	-0.0198 (-2.71) [0.007] ***	-0.0158 (-2.29) [0.022] **
<b>Board Independence</b>	-0.1390 (-1.79) [0.074] *	0.1624 (2.22) [0.026] **
<b>Board Diversity</b>	-0.1638 (-1.65) [0.099] *	-0.1687 (-1.80) [0.073] *
<b>CONSTANT</b>	0.2355 (3.12) [0.002] ***	0.2028 (2.84) [0.004] ***
<b>WALD CHI2(7)</b>	10.50	10.66
<b>CORR (U_I, X)</b>	0 (assumed)	0 (assumed)
<b>PROB &gt; CHI2</b>	0.0623*	0.0585 *
<b>R SQUARE</b>	0.6466	0.6478
<b>SIGMA_U</b>	0.01153	0.0091
<b>SIGMA_E</b>	0.0649	0.0638
<b>RHO</b>	0.0306	0.0200

The result of the random effect test confirms that all the Models have  $\text{corr}(u_i, X) = 0$ , inferring that differences between units are uncorrelated along with regressors in each approach.

The results of the Model 1 ROA suggest that there is a connection between ROA and the three variables. With a constant term coefficient of 0.24 and a p-value of 0.002 (0.2%) which is lower than the significance level of 0.05 (5%), Model 1 is considered significant. This means that if the five independent variables in Model 1 are kept constant, a unit increase in the constant term will result in a 0.24 increase in Model 1. Table 6 confirms that all three explanatory variables have a negative sign. The negative statistically significant variable refers to board size whereby a unit increase in board size will decrease Model 1 by 0.02, given the constant term, and the remaining four independent variables are held constant. Two variables, such as board independence and board diversity, have a p-value greater than 5%, while the variable for board size has a p-value lower than 5%. Therefore, based on the result of the random effect, four explanatory variables are negative and statistically insignificant, while the variable for board size is negative and statistically significant. The negative and significant coefficient for board size indicates that holdings provided the constant term, and the remaining four independent variables are constant; a unit increase in board size will result in a fall of 0.02 in Model 1. The negative statistically insignificant variable of the board committee indicates that a unit increase/ decrease in the variable will decrease/ increase Model 1 by 0.09, given the constant term, and the remaining four independent variables are held constant. The negative coefficient of -0.1390 for board independence indicates that an increase in the board independence variable will lead to a decrease of 0.14 in Model 1 if the constant term and the other two independent variables are kept constant.

Table 4.5 further confirms that two explanatory variables, that is, board size and board diversity have a negative sign while the board committee, board independence and Director Ownership have a positive coefficient. Three variables, such as board size, board committee, and board independence, have a p-value lower than 5%, while the variable for board diversity and director ownership have a p-value greater than 5%. Therefore, based on the result of the random effect, three explanatory variables are statistically significant, while variables for board diversity and director ownership are statistically insignificant.

Following the completion of the Pooled OLS, fixed and random effect tests, it is essential to pick the most suitable model for further examination in this research. This portion details two evaluations, the Hausman Specification Test and the Breusch and Pagan Lagrangian Multiplier Test, which will assist in identifying the optimal model among the Pooled OLS, Fixed Effect model, and the Random Effect model.

The results of the Hausman test can be found in Table 7, and the hypothesis used in this study is presented below.

**H0: Random effect is the preferred Model**

**H1: Fixed effect is the preferred Model**

Table 7: Hausman Results

MODEL	RESULT	CONCLUSION
MODEL 1- ROA	Prob>Chi2= 0.9202	Do Not Reject Null Hypothesis H0
MODEL 2- ROE	Prob>Chi2= 0.9028	Do Not Reject Null Hypothesis H0

Result from Table 7 suggests that under the three scenarios, the reported p-value is higher than 5%. The null hypothesis (H0) is accepted. In all three scenarios, the Hausman Specification Test supported the null hypothesis (H0). As a result, the Random Effect Model is considered the best model to explain the impact of corporate governance on financial performance for the 12 listed companies in Mauritius. Hence, the sampled listed firms used in this study are affected across companies solely and not time specific random effects.

After the Hausman Specification Test supported the Random Effect Model, another evaluation was conducted to verify the suitability of the random effect model compared to the Pooled OLS model. The Breusch and Pagan Lagrangian Multiplier Test for random effects was performed to determine the most appropriate model between the Pooled OLS and the Random Effect regression for further analysis in this research. The hypothesis used is outlined below, and the results of the Breusch and Pagan Lagrangian Multiplier Test can be found in Table 8.

**H0: No Panel Effect (Pooled OLS)**

**H1: Panel Effect (Random Effect)**

Table 8: Breusch and Pagan Lagrangian multiplier test for random effects

MODEL	RESULT	CONCLUSION
MODEL 1- ROA	Prob>Chi2= 0.0000	Reject Null Hypothesis H0
MODEL 2- ROE	Prob>Chi2= 0.0000	Reject Null Hypothesis H0

The results of the Breusch and Pagan Lagrangian Multiplier Test in Table 8 indicate that the Pooled OLS model should be rejected. To sum up, the Random Effect model is chosen and deemed the most suitable approach for this research.

Given the findings of the diagnostic tests, it is necessary to adjust the model to prevent inaccurate results. When a model exhibits issues with serial correlation, the Generalised Least Squares (GLS) method is applied as an effective solution. Previous studies have found GLS to be an effective method for addressing these problems.

Table 9: Extract Comparing Fixed Effect and Random Effect for Model 1 ROA

Variable	Fixed Effect	Random effect
P- value	0.9948	0.0623*
R- Squared	0.0295	0.6466

Fixed effect model 1 ROA has a high insignificant p-value of 0.9948 compared to the low insignificant p-value of 0.0623 under the Random effect but both models have a p-value greater than significance level of 0.05. The fixed effect model has a very low  $R^2$  of 0.0295 compared to the random effect model has 0.6466. In addition, all the five explanatory variables have insignificant p-value under fixed effect model was confirmed by the insignificant explanatory coefficients used in the model. However, under random effect, four explanatory variables are statistically insignificant and only one explanatory variable is statistically significant under the random effect compared to fixed effect model all the three explanatory variables are insignificant. The use of Return on Assets to examine the effect of corporate governance on the financial performance of 12 listed firms in Mauritius leads to the conclusion that the random effect model is the most appropriate one (ROA).

Table 10: Extract Comparing Fixed Effect and Random Effect for Model 2 ROE

Variable	Fixed Effect	Random effect
P- value	0.9823	0.0585*
R- Squared	0.0273	0.6478

Model 2 ROE has an insignificant p-value of 0.9823 as well as a low  $R^2$  of 0.0273 compared to insignificant p-value of 0.0585 as well as  $R^2$  of 0.6478 under the random effect. Both models have a p-value greater than significance level of 0.05. Besides, all the five explanatory variables have insignificant p-value under fixed effect model was confirmed by the insignificant explanatory coefficients used in the model. Moreover, under the random effect, three explanatory variables are statistically significant while only two variables are statistically insignificant. The use of ROA to examine the effect of corporate governance on the financial performance of 12 listed firms in Mauritius leads to the conclusion that the random effect model is the most appropriate one (ROA)

### Conclusion and Recommendation

The results showed a general acceptable standard of corporate governance practices. Most of the listed companies in Mauritius are following the established corporate governance codes, as indicated by the gathered data. It can be concluded that listed companies in Mauritius have large board size but although board size depends on the size of the company as well. However, Board independence is not abided by the listed companies as it consists only of 15% of INEDs. Therefore, 85% of the executive directors were inside directors, meaning there were more inside directors than outside directors. However, having a higher number of outside directors on the board can increase its independence and help it fulfill its duties, responsibilities, and tasks more effectively. Unfortunately, corporate governance practices in Mauritius, including board diversity, are often neglected. Some listed companies in Mauritius do not have any women on their boards. Nevertheless, having more women on boards can bring different skills and perspectives to the table, promoting diverse viewpoints and dynamic discussions in the boardroom.

Based on the outcomes of the findings analysis recommendation in areas where the the adoption of corporate governance practices can be improved are provided below. The listed companies in Mauritius should thereby ensure that the board is not too large given that bigger board size represents a hindrance in making decisions. The results showed that the performance of listed firms in Mauritius is negatively impacted by having a higher board size. In terms of the implications to the policy makers of the listed companies, they should ensure that the board size is not too large since communication is more effective with small board size. Furthermore, listed companies in Mauritius suffer from a serious lack of diversity. The direct and a positive contribution of women in board of companies turn out in better decision making and create fruitful agreement. The policy makers should additionally ensure the presence of women in the board in order to ensure that board diversity is well respected among the listed companies in Mauritius.

### **Declaration of Conflicting Interests**

The Authors declare that there is no conflict of interest.

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# Mainstreaming Climate-Smart Coffee in District Local Government Development Plans: A Case Study of Sheema District, Uganda

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## Abstract

In Uganda, the tangible impacts of climate change, such as irregular rainfall and prolonged droughts, are adversely affecting coffee farmers and disrupting household livelihoods. To address these challenges, this study advocates for the integration of climate-smart agriculture (CSA) into development planning, emphasising the crucial mainstreaming of Climate-Smart Coffee (CSC) given the pivotal role of coffee in Uganda's economic growth. However, the study, reveals persistent challenges in mainstreaming CSC into District Development Plans despite widespread acknowledgment of its importance. Limited material and financial support pose obstacles, along with deficiencies in CSC resources, climate finance opportunities, information systems, and climate assessments at the district level. The study highlights the absence of mentions regarding the utilisation of climate microfinance and microinsurance for supporting CSC interventions. It underscores the necessity for extending the observed momentum in national development plans to the district level, emphasising policies supporting both CSC adaptation and mitigation. The study advocates for enhanced institutional capacity at all levels of District Local Government (DLG) and targeted capacity building, particularly focusing on women, youth, and people with disabilities. Moreover, collaborations with private sector partners engaged in CSC initiatives at district, national, and regional levels are recommended to strengthen CSC mainstreaming efforts. This comprehensive research aims to bridge the gap in understanding the relationship between climate change adaptation and local development planning, specifically within the agricultural domain, contributing valuable insights to inform policies, enhance smallholder farming practices, and advance agricultural extension education at the local governance level.

**Keywords:** Climate-Smart Coffee, Local Government Development Plans, Climate Change Adaptation, Agricultural Development, Sheema District, Uganda

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## Introduction:

The Government of Uganda's involvement with climate change began in 1992 and 1993 with the ratification of the United Nations Framework Convention on Climate Change (UNFCCC). This led to the formation of the National Adaptation Programmes of Action (NAPA) in 2007 (Uganda-NCCA, 2021). Despite criticisms of its execution, NAPA served as inspiration for subsequent plans, including the National Climate Change Policy (NCCP) adopted in April 2015 (NAP-Ag, 2018, Mungai et al., 2020). In the absence of a National Action Plan (NAP), the agricultural sector developed its own NAP, primarily focused on enhancing resilience to climate change impacts. However, the Inter-Governmental Panel on Climate Change (IPCC) emphasises the vulnerability of less developed nations, such as Uganda, to the consequences of climate change (IPCC, 2015, Mwe.go.ug, 2020). The study advocates for the integration of climate change considerations into development planning to achieve Sustainable Development Goals (SDGs) and national development plans.

Despite recent national initiatives and the imminent Climate Change Act, there exists a gap in understanding how DLGs integrate climate change, especially at the grassroots level. The Local Government Act of 1997 empowers DLGs to harmonise, coordinate, integrate, and execute programs/projects under district-approved development plans. However, there is insufficient drive for DLG integration of climate change initiatives. Sustainable development and climate change concepts are vital for Uganda's population, heavily reliant on agricultural sectors. Climate-Smart Agriculture (CSA) is crucial for poverty reduction and livelihood

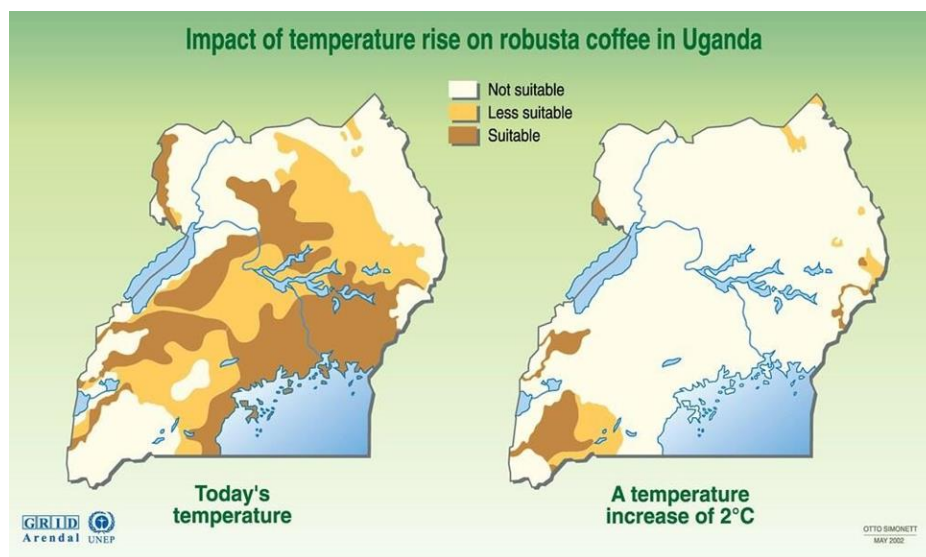
enhancement, yet the focus on national and technical adjustments often neglects DLG-level adaptation components like planning and budgeting.

The primary objective of the study is to explore the mainstreaming of Climate-Smart Coffee (CSC) in DLG development plans, with a specific focus on Sheema District. Specific objectives include investigating the enabling environment for addressing barriers to climate change adaptation in coffee, examining DLG capacity for implementing CSC activities, and exploring the integration of CSC in district agriculture extension programs and budgets.

Inspired by the opportunity to actively address climate change concerns, the study was conducted between June 2022 and January 2023 with the study aim of understanding how DLGs are mainstreaming CSC in their development plans. Findings are expected to significantly enhance governmental climate change adaptation policies, refine smallholder farming practices, and improve agricultural extension education. The study's potential influence on local and global government efforts in coping with climate change is noteworthy. Additionally, the findings contribute to narrowing the literature gap about district local government CSC mainstreaming and provide a basis for future related studies.

### Literature Review

In the realm of climate change impacts on agriculture in Uganda and Africa, with a specific lens on challenges in Ugandan coffee production, this literature review delves into the integration of Climate-Smart Agriculture (CSA) particularly Climate-Smart Coffee into District Local Government (DLG) work plans, focusing on the rural context of Sheema District. The methodological approach encompassed well-defined study objectives, refined searches using boolean operators in Google Scholar, and source tracking via Harvard online reference. With the inclusion of 46 publications from 2001 to 2022, the review prioritises recent, methodologically rigorous articles published in English. Climate change, as defined by IPCC (2007), is characterised by a gradual alteration of the planet's climate primarily due to human activities. Africa faces significant challenges such as crop yield reduction, water scarcity, increased agricultural pests, and extreme weather events. Uganda, heavily reliant on agriculture, faces threats from climate change, impacting coffee production and posing risks to export revenues and food security. Smallholder coffee farmers, constituting over 90% of production (Jassogne, Läderach and Van Asten, 2013), grapple with challenges arising from climate variables affecting coffee plantations, with projections suggesting a reduction of suitable areas by 2050 (AFCA, 2012; Pham et al., 2019). To address these challenges, Uganda has embraced Climate-Smart Agriculture (CSA) to enhance productivity, resilience, incomes, and food security while mitigating greenhouse gas emissions. CSA



Source: Otto Simonett, Potential impacts of global warming, GRID-Geneva, case studies on climatic change. Geneva, 1989.

practices, supported by international aid organisations and financial institutions, have been adopted for coffee farming, emphasising adaptation in the production system (MAAIF, 2018; CIAT, 2011). The literature underlines the critical role of District Local Governments in implementing climate change adaptation plans and the need for mainstreaming CSC into DLG planning to ensure effective implementation at the local level. Despite government policies addressing climate change, challenges persist in adaptation, particularly at local government contexts like Sheema district. The study identified institutional norms, resource constraints, and coordination challenges as barriers to mainstreaming CSA in DLG planning, emphasising the importance of aligning local policies with climate change adaptation efforts. The research gap addressed lies in the lack of documentation regarding the implementation of climate change mainstreaming, particularly the incorporation of CSC into DLG planning in Uganda, with a specific focus on Sheema district, a significant coffee production district. The study aims to provide insights into effective mainstreaming practices for sustainable agriculture and resilient farming systems.

### **Figure 1: Future climate change effects on Uganda's Coffee**

#### **Conceptualization**

The conceptual framework guiding this investigation is outlined below, drawing on insights from the literature discussed earlier. The framework clearly emphasises that the integration of Climate-Smart Coffee (CSC) into District Local Government (DLG) plans is hypothesised to have a significant impact on the adaptability of coffee farmers, conceptualised as the dependent variable (DV). Therefore, to enhance the adaptation of coffee farmers, it is proposed that DLGs must ensure the effective integration of CSC into their development plans.

#### **Conceptual Framework:**

Independent Variable (IV): Integration of Climate-Smart Coffee (CSC) into DLG Plans  
Extraneous Variable (EV): Implementation of CSC Initiatives

Dependent Variable (DV): Coffee Farmers' Adaptability Explanation:

1. Independent Variable (IV): Integration of Climate-Smart Coffee (CSC) into DLG Plans

- This variable represents the proactive inclusion of CSC strategies and initiatives within the broader development plans formulated by District Local Governments. It encapsulates the commitment of DLGs to prioritise climate-smart approaches in their agricultural policies and programs.

2. Extraneous Variable (EV): Implementation of CSC Initiatives

- Acting as an intermediary factor, the implementation of CSC initiatives serves as a crucial link between the integration of CSC into DLG plans and the ultimate adaptability of coffee farmers. Successful implementation ensures that the intended climate-smart practices, technologies, and policies are effectively executed on the ground.

3. Dependent Variable (DV): Coffee Farmers' Adaptability

- This variable represents the key outcome of interest, reflecting the ability of coffee farmers to adapt to the challenges posed by climate change. It encompasses various dimensions of adaptability, including changes in farming practices, resilience to climate-induced stresses, and the overall capacity to sustain coffee production amid changing environmental conditions.

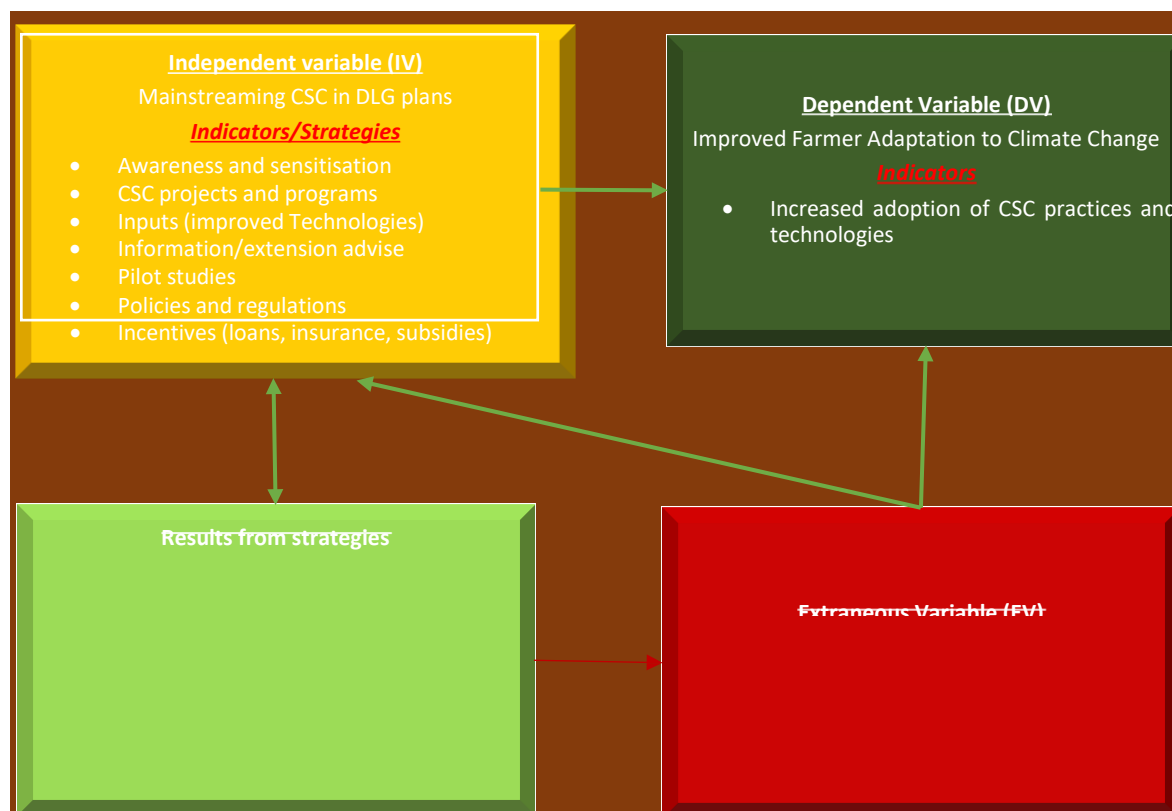
Hypothesis:

- H1: There is a positive correlation between the Integration of CSC into DLG Plans (IV) and the Implementation of CSC Initiatives (EV).
- H2: The Implementation of CSC Initiatives (EV) is positively associated with Coffee Farmers' Adaptability (DV)
- H3: The Integration of CSC into DLG Plans (IV) is positively linked to Coffee Farmers' Adaptability (DV).

Overall Proposition:

The conceptual framework suggests that the successful integration of Climate-Smart Coffee into DLG plans will positively influence the implementation of CSC initiatives. Subsequently, effective implementation is expected to enhance the adaptability of coffee farmers, ultimately contributing to resilient and sustainable coffee production systems in the face of climate change. Therefore, for improved coffee farmer adaptation, DLGs should prioritise and ensure the continuous integration of CSC into their development plans.

**Figure 2: Conceptual Framework (Personal)**



## Methodology

The research was conducted in Sheema district, strategically selected due to its status as one of Uganda's major coffee-growing districts, primarily cultivating Robusta coffee. Positioned in the South Western part of Uganda, Sheema faces vulnerabilities to climate-related challenges, especially drought.

A hybrid approach combining primary data through an online survey and secondary data through desk collection was employed. Preliminary online meetings with district leaders in October 2022 secured permissions, while a subsequent online feedback meeting in January 2023 concluded the results evaluation at the district level. Given the absence of a specific framework for Climate Smart Coffee (CSC) mainstreaming, the study adhered to the general mainstreaming framework from the

Food and Agriculture Organisation (FAO, 2013), specifically module 13. The study developed a customised set of CSC mainstreaming indicators based on this guidance.

To climate smart knowledge and monitoring. This guided me to create a set of individualised CSC mainstreaming indicators for the study.

Using an online questionnaire, quantitative data analysis, and inductive reasoning, the study targeted district technical, administrative, and political staff to capture insights into mainstreaming CSC in District Local Government (DLG) plans. Data collection, conducted in November 2022, involved both secondary and primary sources. A semi-structured online questionnaire was employed for primary data collection, while document analysis was utilised for secondary data. Sampling involved convenient and purposive sampling, ensuring active involvement in coffee and climate change initiatives. The Raosoft online random sampling calculator determined a sample size of 105, allowing for potential withdrawals. Questionnaires and document analysis served as primary instruments for data generation. The semi-structured questionnaire was deployed through Survey Monkey, while document analysis focused on Budget Framework Papers (BFWPs) and reports from the district production department.

After data cleaning and sorting, SPSS Version 21 facilitated analysis, presenting findings descriptively through percentages, charts, and tables. Member checking, external reviews, and a reliability test were employed to ensure data accuracy and credibility, with a Cronbach's Alpha value of 0.841 indicating reliability. Stringent ethical guidelines, including informed consent and anonymity assurances, were adhered to, following University-approved protocols. However, challenges in gathering participants and time constraints emerged as limitations, emphasising the need for further detailed investigations into CSC mainstreaming in DLG plans.

Result area	Indicators
Availability of an enabling environment for addressing the social, economic, policy, regulatory and institutional barriers to climate change	<ol style="list-style-type: none"> <li>1. Availability of district climate change ordinances and bi-laws</li> <li>2. Availability of climate smart incentives and subsidies</li> <li>3. Climate change rural credit (climate loans)</li> <li>4. Climate change risk management (rural insurance to deal with climate shocks)</li> <li>5. Availability and provision of climate resistant coffee varieties</li> </ol>
Capacity building (information, information and knowledge networks)	<ol style="list-style-type: none"> <li>1. Provision of enhanced climate service and agrometeorological info regarding coffee</li> <li>2. Information and understanding of climate risk, coffee climate change investor info</li> <li>3. CSC capacity building activities, (AEOs, farmer, training of trainers, exposure visits)</li> <li>4. CSC learning platforms (farmer field schools, demo gardens, radio/TV programs)</li> <li>5. Provision/availability of coffee climate curriculum development</li> </ol>
Projects on CSC (Focus on projects identified in the Program of Action)	<ol style="list-style-type: none"> <li>1. Soil and water management projects (rain water harvesting, irrigation, fertiliser, IPM)</li> <li>2. Projects on climate-smart coffee agroforestry</li> <li>3. CSC implementation/project timelines (biannual, annual or more)</li> <li>4. Funding sources for climate smart projects</li> <li>5. Implementation agencies/partners for climate smart projects</li> <li>6. "no-one-size-fits-all" CSC approaches (specific to farmer type)</li> </ol>
Iterative learning system, beyond M&E	<ol style="list-style-type: none"> <li>1. Coffee Agro-green businesses, CSC and fair-trade shows and expos</li> <li>2. Agriculture sector budget for CSC pilots and scale up</li> <li>3. CSC stakeholder engagements and feedback process (private sector and CSOs)</li> <li>4. Clear strategies to monitor and evaluate CSC projects</li> <li>5. Clear strategies to disseminate information about CSC (info for future sector planning)</li> </ol>

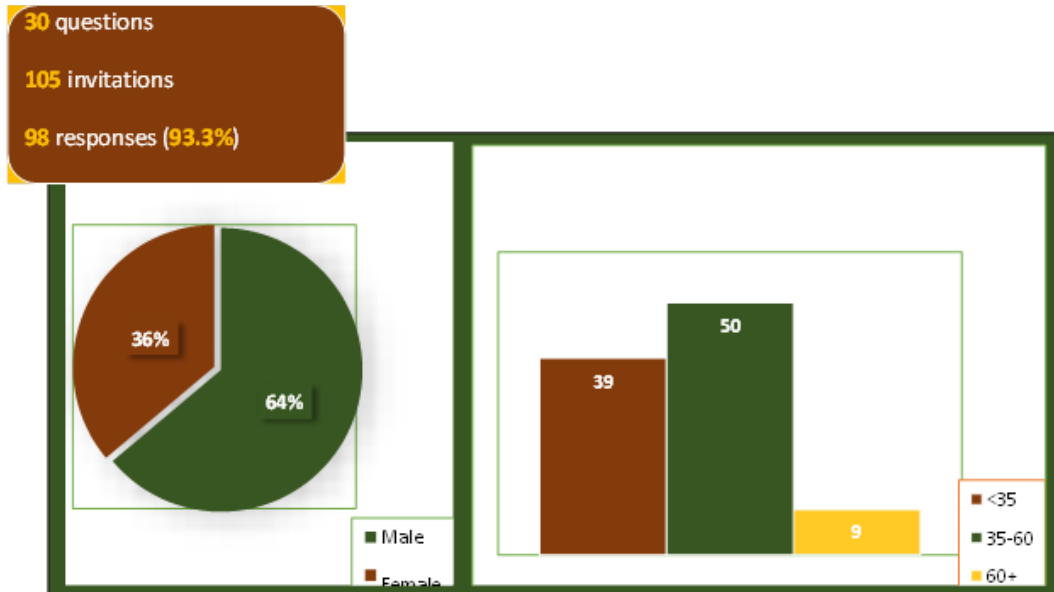
**Table 1: Framework for Assessing CSC Mainstreaming (personal, 2022)**

## Results and Analysis

### Respondents Biodata

Figure 3: Gender and Age of the Respondents

In total, 98 respondents (36% female), majority being 35-60 years old participated in the survey. The respondents were both technical and administrative Officers of Sheema District Local Government.

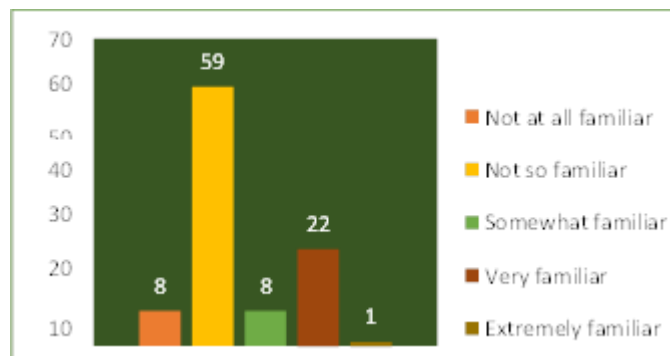


### Objective One – Findings

#### Familiarity with CSC roles and responsibilities

The success of any intervention is very dependent on the capacity of stakeholders understanding their roles. By understanding their responsibilities, they can efficiently perform their assigned tasks and effectively fulfil their responsibilities to the best of their ability. Figure 6 shows that majority of the respondents represented by 60.2% are not so familiar with their roles.

Figure 4: Familiarity of Respondents CSC Roles



#### CSC as a good addition

In addition to comprehending their roles, stakeholders must recognise the significance of CSC. Examining Table 4 reveals that only 1.0% express disagreement regarding CSC's merit as a valuable addition to the agriculture extension system. The overwhelming consensus among respondents is a positive affirmation, indicating widespread support for integrating the CSC model into the district coffee extension system. However,

it is crucial to highlight that the successful incorporation of this model heavily relies on the availability of district funds, primarily sourced from conditional grants provided by the central government. The absence of external assistance could present challenges in translating these favourable intentions into tangible outcomes.

**Table 2: CSC as a Good Addition to the District Agriculture Extension**

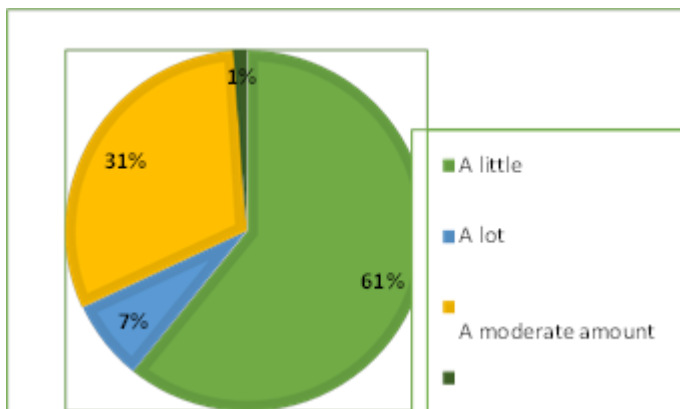
		Goodadditi on			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	51	52.0	52.0	52.0
	Disagree	1	1.0	1.0	53.0
	Neither agree nor disagree	3	3.1	3.1	56.1
	Strongly agree	43	43.9	43.9	100.0
	Total	98	100.0	100.0	

Score 'strongly disagree' was 0

**Integration of CSC model**

The key goal was to find out if CSC is mainstreamed in the DLG workplans. A specific question on the extent to which CSC has been integrated in the district workplans and budgets was asked. ut of the 97 respondents who answered this question, majority (59) said that CSC has been integrated but to a little extent while 30 respondents said that the model has been integrated to a moderate extent.

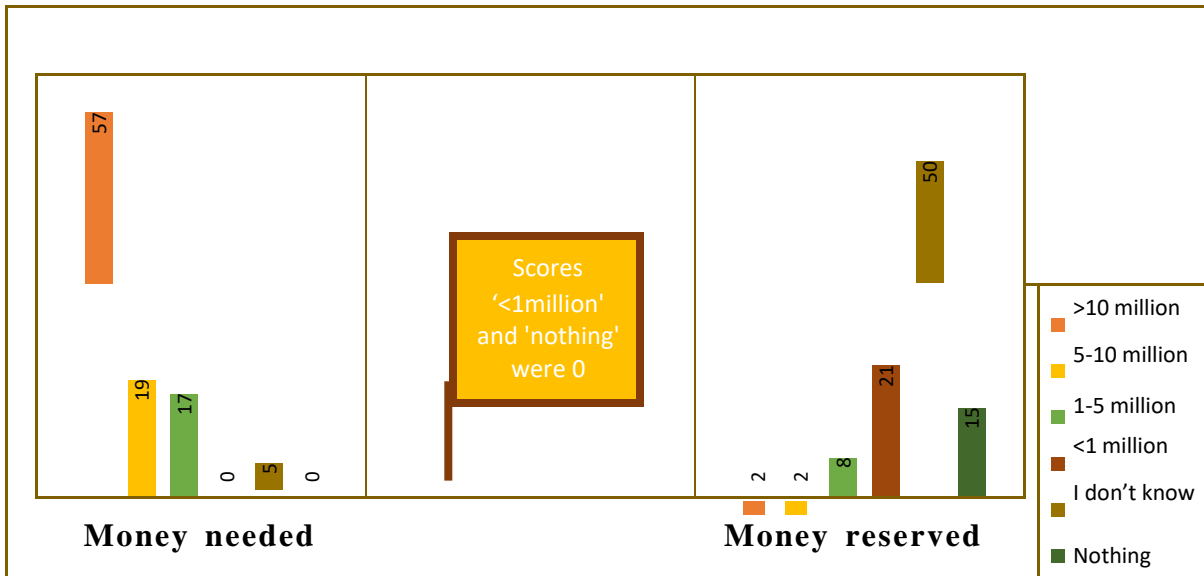
**Figure 5: CSC Integration in Workplans and Budgets**



**Money required vs reserved to finance CSC annual activities**

A question about the money that the district requires and how much is actually allocated to finance annual CSC activities was asked. Overall, majority (58.2%) of the respondents said the district needs over UGX 10M to fund annual CSC activities. On the other hand, more than 50% of the respondents do not know how much the district reserves to finance annual CSC activities, whereas 15.3% reported that nothing is reserved. Figure 8 shows that CSC is not well budgeted, this was even supported by 93.9% of the respondents who expressed their dissatisfaction about this allocation. Only 6.1% were satisfied with this budget.





**Figure 6: Funds to Finance Annual CSC Activities**

**CSC Committees**

As already disclosed by the limited integration of CSC above, it is not surprising that a measurable number of respondents (73 out of 96) that answered this question said that CSC committee/s do not exist while 13 respondents were not sure. Only 10 respondents said that CSC related committee at the district exist.



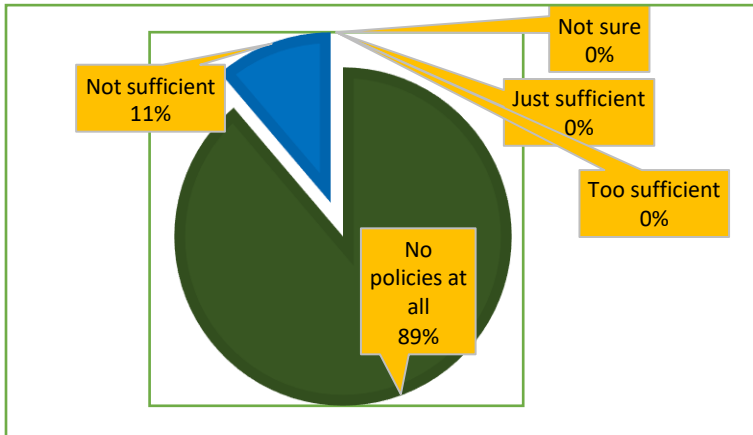
**Figure 7: Existence of CSC Committees**

**CSC Policies and Regulations**

CSC mainstreaming depends on the effectiveness of law enforcement, supervision and monitoring. Over 85% of the respondents said that there are no CSC policies and regulations at all, while 11.2% said that the existing policies are not sufficient. No respondent reported that the existing CSC policies were sufficient.

**CSC Policies and Regulations**

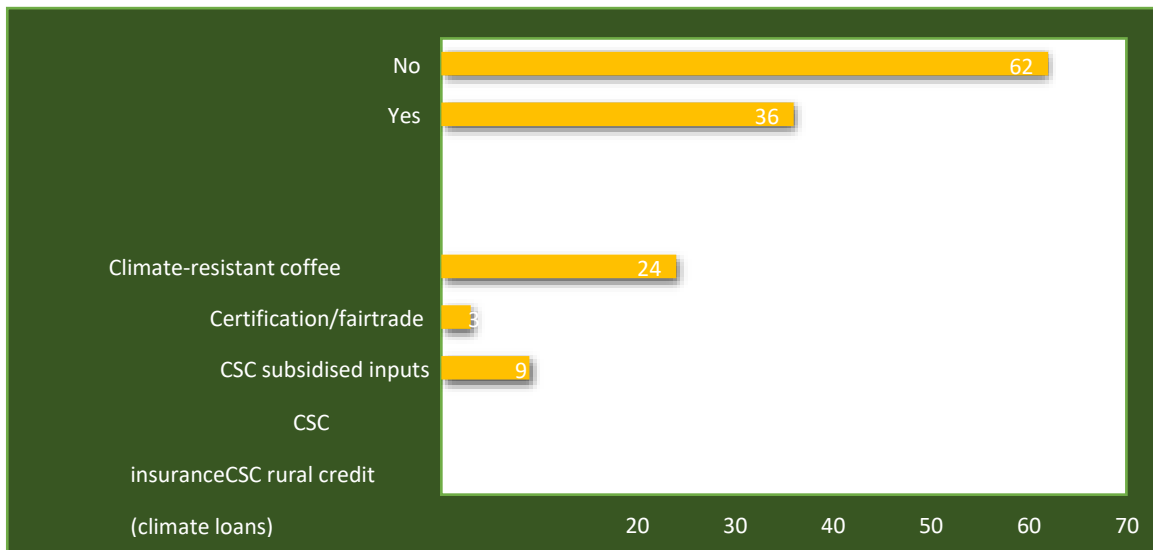
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**Figure 8: CSC Policies and Regulations**

**CSC Incentives**

For successful mainstreaming, CSC regulatory measures need to be linked to economic incentives such as certification, access to climate change rural credits, or subsidised climate change equipment and advantages in the insurance markets. For instance, short-term financial support needs to be frequently combined with voluntary community-based programs to encourage farmer participation. Over 60% of the respondents reported that CSC incentives do not exist. Nevertheless, a promising number of respondents (36 out of 98) representing 36.7% reported that CSC incentives are in place. Majority (24 out of 36) of the respondents who said that CSC exist, scored free distribution of drought resistant coffee varieties highest. On the other hand, CSC insurance and CSC credit/loans ranked lowest with each scoring zero.



**Figure 9: Availability and Types of CSC Incentives**

**Table 3: Open Ended Remarks on the Status of an Enabling Environment for CSC**

Coffee is one of the major priority enterprises of the district, it is a big source of income for majority of smallholder farmers.

There is need to put in more money to fight climate related issues in coffee production The district has no sector budget and workplan for CSC inclusion

Lobbying for budget and more funding is required.

I am not involved much in planning for CSC. Integration of CSC activities in district work plan budget.

Climate change adaptation budget should be specific to enterprises and farmer levels The CSC model need to be incorporated in the district budget and programs

There is progress of including CSC in our budget and workplans but funding is little. As district, there is provision of information about climate change to coffee farmers. There are a few CSC specific advisors.

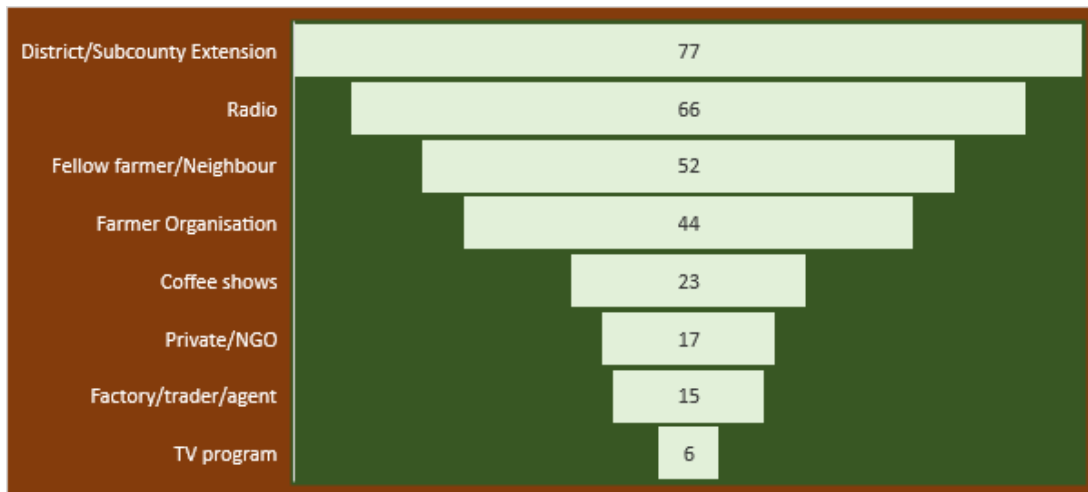
Streamline regular district coffee-climate change meetings. More technical knowledge on CSC is needed

**Sentiment analysis (JSON): positive (47% confidence)**

**Objective Two – Findings**

**Sources of CSC information**

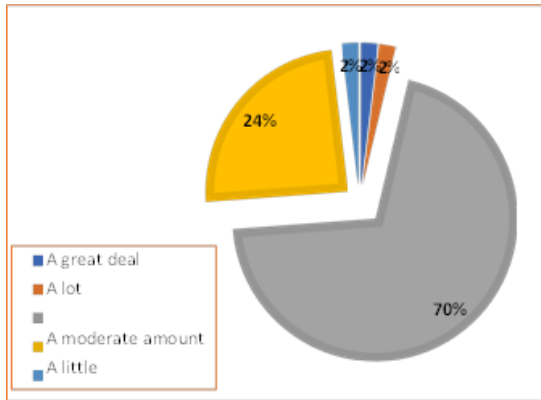
To ensure the integration of CSC, it is imperative that farmers have access to diverse sources of information. A survey generating 300 responses sought to identify the primary source of CSC information. The findings indicate that district agriculture extension services and radio garnered the highest number of responses, whereas TV and factory sources received the fewest responses. Notably, the results underscore the crucial role played by farmers in rural areas in disseminating agriculture and coffee climate information.



**Figure 10: Sources of Information for CSC**

**Extent to which farmers are informed**

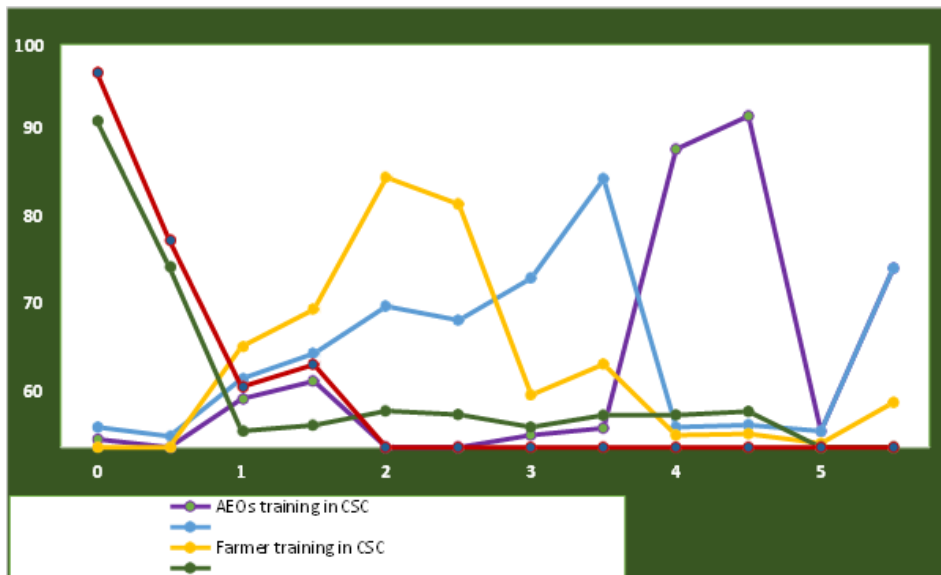
Effective communication in Climate-Smart Agriculture (CSA) fosters dialogue on science-based solutions for climate change in farming. It is crucial that farmers are well-informed about climate change, particularly in coffee production. When assessing the level of information among farmers on Climate- Smart Coffee (CSC) issues, the majority of respondents indicated that farmers are moderately informed. Only 2% of the respondents reported that farmers are not informed at all.



**Figure 11: Famers Informed About CSC**

### CSC Stakeholder Trainings

Capacity building in climate change is crucial for preparing communities and empowering farmers to adapt successfully to its effects. Respondents ranked the frequency of Climate-Smart Coffee (CSC) training programs in the district on a scale of zero to five, representing none to the highest frequency, respectively. The training of Agricultural Extension Officers (AEOs) received the highest ratings, indicating its prominence, while training of trainers in CSC was rated the lowest. Notably, there were no specific farmer study exchange visits focused on CSC.



**Figure 12: CSC Stakeholder Trainings**

### CSC Specific curriculum

Another crucial aspect of Climate-Smart Agriculture (CSA) mainstreaming is the existence of a climate change curriculum or training package. This curriculum is designed to expound on key concepts related to adaptation, mitigation, and climate vulnerability. The training package provides an overview of the challenges posed by climate change in agriculture. Furthermore, it equips farmers and Agricultural Extension Officers (AEOs) with practical knowledge through technical information, real-world examples, and best practices. Respondents were asked about the existence of a specific Climate-Smart Coffee (CSC) curriculum or training package, and all 98 respondents answered negatively. This implies that the district does not currently rely on a dedicated CSC curriculum when conducting CSC training sessions.

### CSC Specific Practices Promoted

The integration of Climate-Smart Coffee (CSC) necessitates the endorsement of coffee-climate- specific practices that go beyond conventional Good Agricultural Practices (GAPs). These specialised practices are designed to enhance farmers' resilience to evolving weather patterns and facilitate sustainable increases in yields. A query regarding the existence and nature of CSC practices being advocated by the district was posed. A significant majority, comprising 91.8% of the respondents (90 out of 98), affirmed that the district actively promotes CSC-specific practices. Conversely, a minority of respondents (9 out of 98) indicated that the district does not endorse any specific CSC practices.

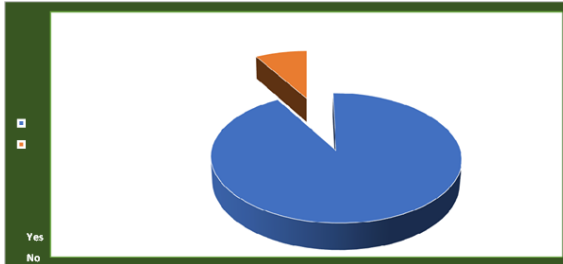


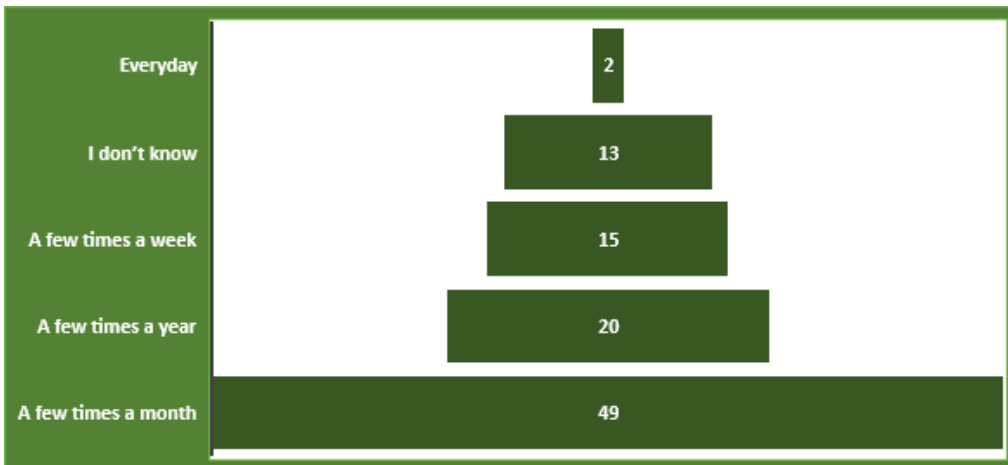
Figure 13: CSC Specific Practices Promoted by the district

### Type of CSC practices being promoted

While over 90% of the surveyed participants acknowledged the promotion of Climate-Smart Coffee (CSC) practices, delving into the specifics of the practices proved essential. Predominantly, respondents cited Good Agricultural Practices (GAPs), indicating potential technical confusion between general GAPs and those tailored to climate-centric approaches. However, some respondents highlighted distinct CSC practices, including micro-scale irrigation, provision of climate-resistant coffee planting materials, coffee-agroforestry initiatives, and the encouragement of organic fertiliser usage.

### Frequency of AEOs -farmer reach

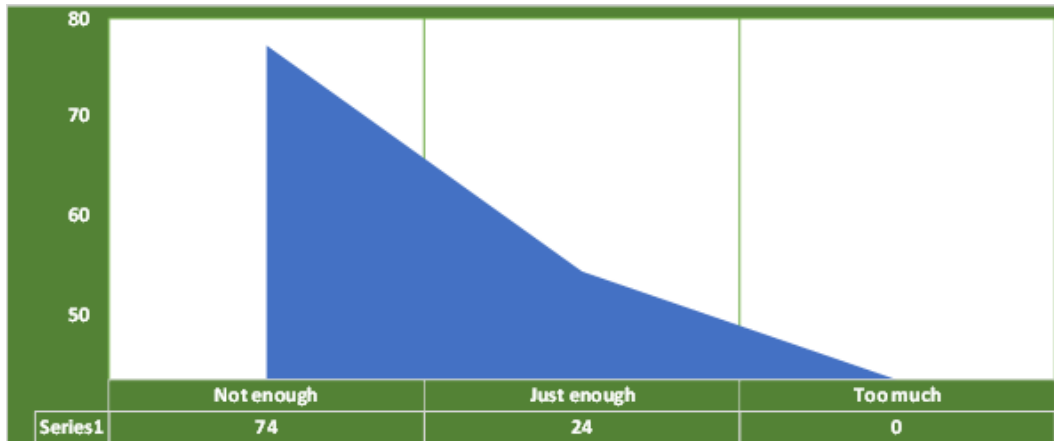
To be considered mainstreamed, farmers should be getting regular CSC technical backstopping and support from AEOs to stay current on the rapidly changing climate trends in technology, science and a variety of other climatic issues that have an impact on coffee farming operations. Majority of respondents said that AEOs reach out to farmers only a few times a month.



**Figure 14: Frequency of AEOs -Farmer Reach**

**Views about frequency of AEO-farmer reach**

A significant number of respondents (i.e., 74 out of 98 represented by 75.5%) reported the above reach was not enough implying a gap in the rate of farmer reach by AEOs on CSC issues. The remaining 24.5% said that rate is just enough. No respondent said that reach was too much.



**Figure 15: Views about Frequency of AEOs -Farmer Reach**

**Confidence of AEOs in Delivering CSC Extension**

Although not directly linked to the indicators of CSC/agriculture mainstreaming, a high confidence of AEOs in delivering the climate change messages reflects that they have received adequate training and subsequently implying that the district has or is on the road to CSC mainstreaming. Table 6 shows that the respondents are somehow happy with the confidence of the AEOs, whereby more than half said that the AEOs are some somewhat confident. Regardless, only 17.6% reported that the AEOs are very confident.

**Table 4: Confidence of AEOs in Delivering the CSC Extension Services to Farmers**

Response options	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely confident	4	4.1	4.1	4.1
Not at all confident	2	2.0	2.0	6.1
Not so confident	21	21.4	21.4	27.5
Somewhat confident	54	55.1	55.1	82.6
Very confident	17	17.3	17.3	100.0
<b>Total</b>	<b>98</b>	<b>100.0</b>	<b>100.0</b>	

**Table 5: Open Ended Remarks on the Status of Capacity Building in CSC**

AEO-farmer technical backstopping and support in CSC issues is very limited  
 Capacity building of AEOs and all farmer trainers in CSC issues is highly needed  
 1. Support the establishment of CSC demonstration plots. 2. Support study exchange visits  
 Support in putting up CSC demos. Support media/radios to deliver CSC messages to farmers. Some  
 AEOs and farmers have received training in CSC especially from private sector Farmers are  
 very positive to learn new CSC technologies  
 Farmers who are adapting to CSC are seeing great impact in their coffee farms AEO  
 farmer ratio is currently very big in the district  
 AEOs have limited experience in delivering CSC extension services.  
 The district has not incorporated CSC its budget and workplans Climate  
 change effects in coffee are becoming rampant  
 Training curriculum and materials for CSC need to be developed. They should have  
 messages and pictures that are easily understandable. Document and share CSC successes The  
 district has limited resource envelope. The district is facing challenges of low revenue.  
 Mainstreaming requires willingness of the farmers

**Sentiment analysis (JSON): Neutral (65% confidence)**

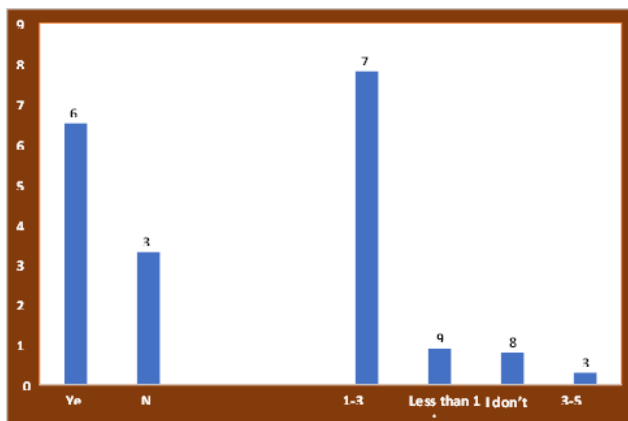
**Objective Three – Findings**

**CSC specific programs/projects**

Another major indicator of CSA mainstreaming is the planning, budgeting, implementation and monitoring of CSA specific programs, projects and initiatives. More than 50% of the respondents reported that the district is implementing CSC programs and projects. To get evidence-based data on these results, an open-ended question was asked about the examples of CSC programs that the district is implementing. Results include use of solar in coffee production system, small scale micro irrigation systems, intercropping coffee and bananas, conservation agriculture, crop diversification, seasonally appropriate planting dates and agroforestry. Findings from the desk reviews also revealed coffee climate change information and early warning system is one the off- farm CSC-related services being promoted by the district (Uganda's NAPA from 2007).

**Timeline for CSC programs/projects**

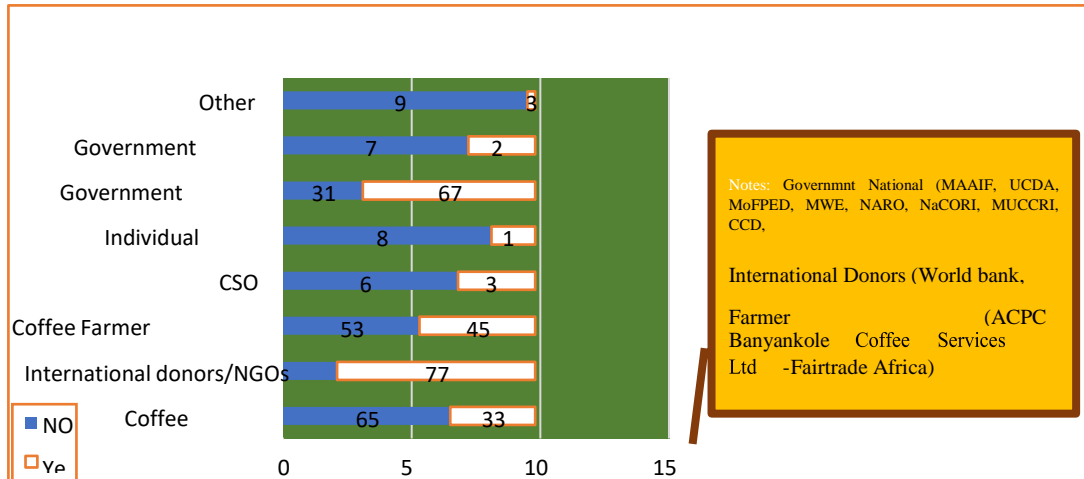
Similarly, the majority of CSC programs in the district has relied on short-term initiatives i.e., 1-3 years of execution whose effects on long-term resilience are occasionally difficult to discern. However, the district persisted that it is advocating for the international community to provide funding for long-term adaptation and working to ensure local budgetary allocation.



**Figure 16: CSC Projects and Programs Implemented by the district**

**CSC Partnerships**

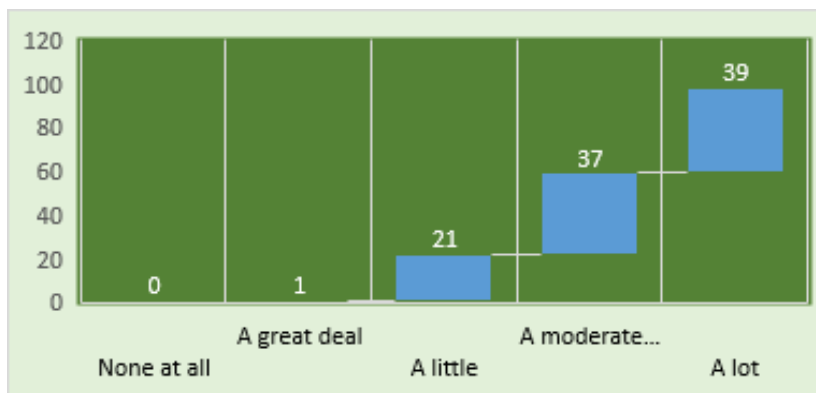
Networks and partnerships at national and international level are an important resource used in institutionalisation of CSC planning. In Sheema, most of the funds for coffee climate-related initiatives come from the national government working and interacting with established/ongoing development initiatives with assistance from donors and development organisations. International organisations like International Institute of Tropical Agricultural Research (IITA) and government organisations like National Agricultural Research Organisation (NARO) appeared in document analysis for advocating funding and research into improved, drought resistant and disease-free seed varieties.



**Figure 17: Partnership/s in CSC**

**Women and youth involvement**

It is crucial that all men, women and youth are involved in planning and execution of CSC for sustainable development. Generally, majority of the respondents reported good involvement of women and youth in design and delivery of CSC programs.





## Figure 18: Women and Youth Involvement

### Monitoring of CSC programs/projects

For sustainable CSC management, there is need for continued monitoring, documentation and sharing of experiences of CSC activities. Figure 21 shows that, there is widespread support for this parameter, although the means are still minimal

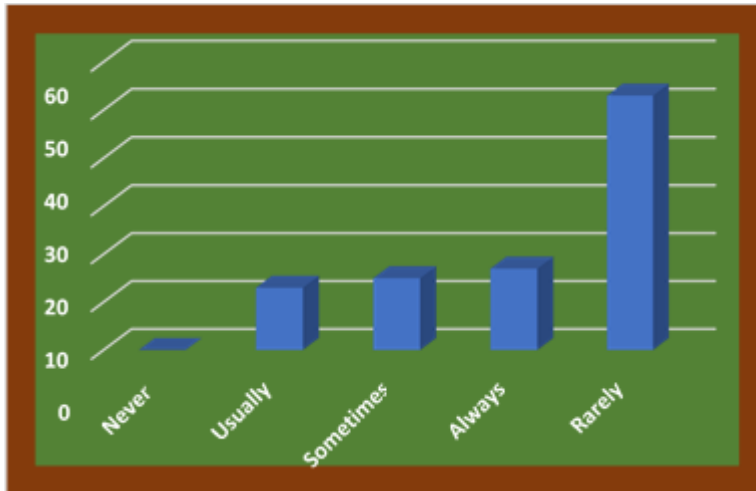


Figure 19: Follow-up of CSC Activities

Table 6: Open ended remarks on the status of projects/programs on CSC

The coffee extension is greatly improving. It has the best-developed value chain and linkage among actors when compared to other district priority enterprises.  
The coffee productivity has increased tremendously due to increased and improved service delivery by the public extension workers and newly trained CCBFs  
CSC requires a robust system for routine follow up and monitoring.

There is need more patterners working on climate change projects in coffee. Multistakeholder support, planning, consensus on CSC program implementation is critical  
The CSC programs implemented in the district are inclusive of all men, women and youth  
Most projects are for general management of coffee but not climate specific

There are some gaps in delivery CSC projects

Need more coffee patterners working with extension workers

Women and youth encouraged to participate in CSC activities. But coffee is still considered a male dominated enterprise

Create working groups, for specific climate change coffee issues

Increase private sector participation and leverage on their resources in CSC

**Sentiment analysis (JSON): positive (93% confidence)**





## Correlation Analysis

**Table 7: Correlation Analysis**

Correlations		Independent				
Dependent		Regulations	Money reserved	Incentives	CSC Committee	Partnerships
Familiarity with CSC objectives and Roles	Pearson Correlation	1.000	.306**	-.017	-.067	.085
	Sig. (2-tailed)		.002	.866	.509	.403
	N	98	98	98	98	98
CSC Integration	Pearson Correlation	.306**	1.000	-.284**	.047	.216*
	Sig. (2-tailed)	.002		.005	.644	.033
	N	98	98	98	98	98
Practices Promoted	Pearson Correlation	-.017	-.284**	1.000	-.060	.063
	Sig. (2-tailed)	.866	.005		.559	.538
	N	98	98	98	98	98
CSC source of info	Pearson Correlation	-.067	.047	-.060	1.000	-.101
	Sig. (2-tailed)	.509	.644	.559		.324
	N	98	98	98	98	98
CSC project timeline	Pearson Correlation	.085	.216*	.063	-.101	1.000
	Sig. (2-tailed)	.403	.033	.538	.324	
	N	98	98	98	98	98

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
 \* . Correlation is significant at the 0.05 level (2-tailed).

From the analysis, all variables analysed do not have a linear relationship with each other i.e., there was no zero (0) Pearson Correlation. The results also indicate that perfect linear relationships exist between;

-  Familiarity with CSC objectives and policies and regulations set CSC integration and money reserved to finance CSC initiatives
-  CSC practices promoted and availability of incentives;
-  Source of CSC information and existence of CSC committee
-  CSC project timeline and level of partnerships

This implies for example improve integration of CSC, the district needs to increase on the money reserved for CSC activities; increased partnerships will directly increase the time of CSC projects promoted at the same time sources of CSC information will increase with increase in CSC committees.

### Implications for Hypotheses Testing:

The results provide support for the hypotheses theorised earlier, suggesting that factors such as financial commitment, partnerships, and the existence of CSC committees are integral to the successful integration of Climate-Smart Coffee into DLG workplans. The identified correlations offer insights into potential strategies for enhancing CSC integration and effectiveness in Sheema District.

## Discussions

The study aimed to investigate the mainstreaming of Climate-Smart Coffee (CSC) into the development plans of District Local Governments (DLGs), focusing on Sheema District in Uganda. The findings reveal challenges in fully integrating CSC into local development plans. Despite national policies and frameworks emphasising climate change adaptation, the translation to effective local-level planning remains a hurdle. The District Development Plans (DDPs) lack comprehensive incorporation of CSC, indicating a gap in understanding and implementation at the district level. Existing national policies, such as the National Climate Change Policy and guidelines for the agricultural sector, set the framework for climate change adaptation. However, the study identifies a disconnect in translating these policies into practical actions at the district level. The lack of specific laws, plans, or policies for CSC in the coffee industry exacerbates the challenge. Despite recognising the importance of integrating climate change into development plans, Sheema DLG's specific efforts for CSC are limited. The findings align with broader challenges in African countries, where turning national policies into local actions remains a complex task. The study suggests that the influence of Uganda's adaptation policies may be externally driven, fulfilling reporting obligations to international bodies rather than addressing local priorities. Concerns extend to budgetary allocations, where the district falls short in dedicating funds specifically for CSC. The budgeting process, often guided by indicative planning figures, lacks the necessary focus on CSC mainstreaming. The absence of a designated budget line for CSC activities and insufficient financial support from the central government further hinder effective mainstreaming. The study highlights the critical need for enhanced capacity building at the district level to facilitate successful CSC integration. The current institutional focus on environmental management over the systematic planning, implementation, and evaluation of CSC activities poses a barrier to effective mainstreaming.

Efforts to mainstream CSC face challenges in institutionalising a training plan or curriculum specifically for Climate-Smart Coffee. The technical capacity of Agricultural Extension Officers and the confidence to provide CSC-specific advice to coffee farmers are identified gaps. Inadequate extension services, even when technically capable, contribute to limited adoption of CSC practices among smallholder farmers. Despite these challenges, the study recognises positive aspects, such as the Sheema district's commitment to improving institutional capacity for CSC mainstreaming. Initiatives like collecting weather information using Geographic Information System (GIS) in collaboration with relevant offices demonstrate ongoing efforts. However, the absence of an institutionalised training plan for CSC remains a notable limitation. Effective mainstreaming requires channelling the momentum of CSC at the national level into DLG plans. District planning authorities should consider CSC a crucial initiative for climate change adaptation, integrating reliable information, assessment tools, and context-specific practices. Strengthening the agriculture extension system and ensuring AEOs possess adequate knowledge of CSC are crucial for successful mainstreaming.

The study emphasises the essential role of engagements and partnerships for CSC mainstreaming, involving the private sector and various stakeholders. Collaborations with organisations like Café. Africa Uganda and Ankole Coffee Producers Co-operative Union Ltd demonstrate external support for CSC interventions. However, the study calls for a more comprehensive engagement process, emphasising the need for all stakeholders to own the CSC-Plan. Noteworthy CSC practices and projects in the district, such as coffee-agroforestry and conservation agriculture, aim to enhance livelihoods and reduce greenhouse gas emissions. However, recommendations for additional CSC practices like water harvesting and solar energy are proposed. The study advocates for targeted and prioritised CSC practices, supported by strong extension services and private sector involvement. The study recognises the presence of funding opportunities but highlights the need for long-term instruments to support coffee farmers in understanding and benefiting from CSC interventions. The engagement of the private sector is crucial, and efforts to create markets, and microfinance for CSC programs are encouraged.

Matthews et al. (2012) underscore the pivotal role of District Local Government (DLG) planning as a critical success factor for mainstreaming climate change, providing a platform for resource mobilisation and cooperative partnerships in addressing climate-related issues. The imperative to integrate Climate-Smart Coffee (CSC) into development plans at the local government level is emphasised, recognising the significance of local policies and strategies in guiding and supporting effective adaptation efforts (Burton et al., 2006). This study reveals a gap in the realisation of this imperative, particularly in the context of Uganda, where coffee farming holds paramount importance for national development. Despite the acknowledged importance of coffee to Uganda's development, the call for mainstreaming CSC into DLG plans has not materialised adequately. The

study identifies a lack of tangible evidence of climate considerations related to coffee in DLG plans, despite a seemingly high appreciation of the relevance of the CSC model within the district's agriculture extension system. Despite the existence of the climate change coffee policy, there is a notable absence of full integration of CSC into local government development planning. Institutional capacity gaps emerge as a critical challenge, particularly the insufficient budgetary support for local governments' endeavors in mainstreaming climate-smart agriculture, with constrained budget allotments for CSC mainstreaming. The study observes a deficiency in budget allocations to CSC, insufficient to address the key priorities associated with climate-smart agriculture. The conclusion drawn from the data on CSC mainstreaming in Sheema District Local Government suggests that DLG climate change mainstreaming in Uganda remains a challenging endeavor. Moreover, the study underscores the necessity for a strong momentum of Climate-Smart.

Agriculture (CSA) at the local level, aligning with the vigor seen in national development plans. This emphasises the need for a coordinated and synchronised effort across different levels of governance to ensure that climate change considerations, especially those related to crucial sectors like coffee farming, are seamlessly integrated into planning processes. The study urges a more concerted focus on strengthening DLG capacities, aligning budget priorities, and fostering a robust regulatory framework to facilitate the effective mainstreaming of climate-smart initiatives in agricultural practices at the local level in Uganda.

### **Implications for Theory and Practice**

The implications drawn from the data underscore the need for a comprehensive re-evaluation and adaptation of existing strategies to effectively address the challenges and opportunities associated with mainstreaming climate-smart initiatives, particularly in the context of agricultural practices at the local government level in Uganda. The findings highlight the pivotal role of District Local Government (DLG) planning as a cornerstone for successful climate change mainstreaming, emphasising the necessity for theoretical frameworks and practical guidelines that explicitly recognise and integrate climate considerations at the local government level. Furthermore, the study emphasises the gap between the existence of a climate change coffee policy and its integration into local government development planning, suggesting a need for refined theoretical models and practical tools for policy implementation at the local level. The identified institutional capacity gaps, especially the lack of sufficient budgetary support, underscore the necessity for approaches focusing on enhancing the capabilities of local institutions, including frameworks for effective budget allocation, resource mobilisation, and strategic planning for climate-smart agriculture. Additionally, the study advocates for a robust regulatory framework, indicating the need for theoretical models guiding the formulation and implementation of policies at the local level, ensuring alignment with broader national objectives. The call for a more concerted focus on strengthening DLG capacities points to the importance of strategies guiding capacity-building initiatives at the local level, encompassing frameworks for training, knowledge exchange, and skills development tailored to the specific needs of DLGs engaged in climate change mainstreaming. Overall, these implications highlight the multidimensional nature of climate change mainstreaming and call for an integrated and adaptive approach to theory and practice.

### **Recommendations**

Based on the implications drawn from the data, a set of comprehensive recommendations emerges to guide climate change mainstreaming efforts, particularly in the domain of agricultural practices at the local government level in Uganda. Firstly, there is a pressing need for an overhaul and adaptation of existing strategies and policies to effectively tackle the challenges and capitalise on opportunities related to mainstreaming climate-smart initiatives. Recognising the pivotal role of District Local Government (DLG) planning, it is imperative to develop and implement theoretical frameworks and practical guidelines that explicitly acknowledge and integrate climate considerations at the local government level. To bridge the gap between the existence of a climate change coffee policy and its integration into local government development planning, refined theoretical models and practical tools for policy implementation at the local level are recommended. Addressing institutional capacity gaps, particularly the inadequacy of budgetary support, necessitates the formulation and implementation of theories and practices focused on enhancing the capabilities of local institutions. This includes the development of frameworks for effective budget allocation, resource mobilisation, and strategic planning tailored to climate-smart agriculture. Furthermore, a robust regulatory framework is essential, demanding the creation of theoretical models guiding the formulation and implementation of policies at the local level to ensure alignment with broader national objectives. To fulfil the

call for a concerted focus on strengthening DLG capacities, there is a need for strategies and practices guiding capacity- building initiatives at the local level. This involves the development of frameworks for training, knowledge exchange, and skills development tailored to the specific needs of DLGs engaged in climate change mainstreaming. Overall, these recommendations advocate for an integrated and adaptive approach to theory and practice, emphasising the multidimensional nature of climate change mainstreaming and the necessity for coordinated efforts across various governance levels.

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# An Analysis of YUOE Students' Errors in their Writing

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## Abstract

Learners make errors that are crucial parts and aspects in the process of learning a language. **Error analysis** plays an indispensable role in applied linguistics as well as in the teaching-learning process. And it provides insight into the systematic development of language learning, assisting the procedures of identifying, describing and explaining students' error. The aim of this paper is to investigate errors made by the third-year (COE) students from Yangon University of Education. The research was carried out by the frame work of Caral James (1998) in terms of two categories: **lexical errors** and **grammatical errors**. Then, this paper attempts to provide a **pedagogical precaution**, known as treatment of errors, the remedial teaching strategies and techniques for the English Language Teachers. It is hoped that results of the study will contribute teachers as well as students with pedagogical purposes.

**Keywords:** Error Analysis, Lexical Analysis, Grammatical Error, Pedagogical Precaution

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## Introduction

Learners inevitably commit errors in the process of foreign language learning. "Errors refer to the systematic (mistakes) of the learner from which we can construct his knowledge of the language to date, i.e., his transitional competence" (Corder, 1967). Error analysis is a type of linguistic analysis that focuses on the errors of learners in the stages of language acquisition "with the practical intention to develop objective standards of judgment or didactic measures to reduce or eliminate such error" (Rein, 1983).

Error analysis is a very important area of applied linguistics and of second and of foreign language learning. Applied linguistics tries to deal with the problems and issues related to language as well as to its learning and teaching. Error analysis provides a deep insight for understanding of the processes of language learning. Writing, a productive skill of a language, is a complex process even when one is done so in the first language. Naturally, it becomes even more complicated when writing in a foreign language or a second language. Researchers take into consideration to identify the most common errors made by language learners in their writings. Thus, error analysis aids teachers with the adoption of appropriate teaching strategies and methods to help students to raise their awareness of learning a foreign language, including how to produce the target language more effectively.

The aim of this research is to take a pedagogical precaution as treatment of errors for the students from Education Degree College to arouse their proficiency in English when they join a bridge course for their further studies or their postgraduate courses: M.Ed. and Ph.D. courses in Yangon University of Education. Thus, the analysis of learners' language has become an essential need to overcome some questions and proposed solutions regarding different aspects. The stages of the research were conducted by the frame work of Caral James (1998) in terms of two categories: lexical errors and grammatical errors.

This study deals with the error analysis and its contribution to English language teaching at both linguistic and methodological level. The teachers can utilize the errors as guidance for the learners. Errors can be reduced and driven away with the students in learning by giving feedback and remedial exercises as well.

This study will cover the following research questions:

- What are the types of errors in writing made by third year students of Yangon University of Education?
- Why did the students make these errors?
- What kinds of treatment should be given to students' errors?

This paper provides many opportunities for sequence items in linguistic resources to be correlated to the strategies and procedures the students produce in the target language acquisition. It also intends for teachers, to highlight the requirements that are required to be covered for the students in Education Degree Colleges to arouse their proficiency like students from YUOE (Direct Intake).

## Literature Review

In the past, the field of error analysis was highly influenced by the behaviorist learning theory of language, and students' errors were considered the result of the existence and interference of the rules of the first language.

It has been a shift in pedagogical focus from preventing errors to learning from errors – a fact that, is reflected in George's (1972) statement that, "*it is noteworthy that at the beginning of the sixties the word 'error' was associated with correction, at the end with learning*". There was a significant change in foreign language methodologies and materials. Observation on students' errors also has immediate practical applications for foreign language teachers (Corder 1973):

*"Errors provide feedback, they tell the teacher something about the effectiveness of his teaching materials and his teaching techniques, and show him what parts of the syllabus he has been following have been inadequately learned or taught and need further attention".*

Errors are 'systematic', it is likely to happen regularly and not recognized by the learner. Hence, only the teacher or researcher would locate them, and the learner would not (Gass and Selinker, 1994). Norrish (1983) made a clear distinction between errors and mistakes. He stated errors are "systematic deviation when a learner has not learned something and consistently gets it wrong." He added that when a learner of English as a second or a foreign language makes an error systematically, it is because he has not learned the correct form. Norrish defined mistakes as 'inconsistent deviation'. When a learner has been taught a certain form, and he uses one form sometimes and another at other times quite inconsistently, the inconsistent deviation is called a mistake. It is obvious that an error is considered more serious and the researchers have chosen to focus on students' error mot mistakes.

There are many researchers who are interested in categorizing errors and the literature containing various types of errors. Leah and Magno (2012) classified errors as, omission errors, addition errors, misformation errors, wrong order, spelling errors, system errors, and so on. This classification is similar to those found in Dulay, Burt and Krashen (1981) who categorize errors into four types, omission, addition, misformation, and disordering, Caral James (1998) errors into nine categories: prepositions, articles, singular/plural, adjectives, irregular verbs, tenses, concord, possessive case, and passive/active in grammatical errors.

Error analysis was first introduced by Lado (1957) who claimed that learners of a foreign or second language make errors during their learning process and these errors could be predicted based on differences between their native language and the second language in which they are learning. James (1998) claimed that error analysis is one of the most influential theories of second language acquisition and is concerned with the analysis of the errors committed by L2 learners by comparing the learners' acquired with the target language norms and explaining the identified errors. According to James, error analysis refers to "the study of linguistic ignorance, the investigation of what people do not know and how they attempt to cope with their ignorance". For Crystal (1999), error analysis in language teaching and learning is the study of the unacceptable forms produced by someone learning, especially a foreign language.

Coder stated the purpose of error analysis is, "what the learner knows and does not know" and to "ultimately enable the teacher to supply him not just with the information that this hypothesis is wrong, but also, importantly, with the right sort of information or data for him to form a more adequate concept of a rule in the target a language". The procedure for error analysis was elaborated by Corder (1974) as comprising five stages:

- selection of a corpus of language
- identification of errors in the corpus
- classification of the error's identification
- explanation of the psycholinguistics causes of the errors
- evaluation (error gravity ranking) of the errors.

According to Keshavarz (2003,2006), the field of error analysis is divided into two branches:



- a. **Theoretical Analysis of Errors:** Theoretical analysis of the errors tries to find out the problems and issues related to language learning and explore the underlying structures that work in the process of language learning. It investigates the reasons of the errors in the process of learning.
- b. **Applied Error Analysis:** It deals with designing material and other remedial courses and methodologies for resolving those problems that are highlighted by the theoretical analysis of the errors.

## Related Research

For years, there have been many studies on the process of foreign language teaching-learning process. Several researchers, linguists, scholars and teachers did a lot of research on error analysis in Foreign Language Acquisition and Second Language Acquisition.

The first research that has been conducted in Jordan, an Asian country, in which English is regarded as a foreign language. The research on “Error Analysis of Spelling Among University Students of English in Jordan: An Analytical Study (2020)” was conducted by Jibrel Harb, The World Islamic and Science Education University, Jordan. This paper is one of the official conference proceedings in the European Conference on Language Learning in 2018. This study aims at investigating the spelling mistakes made by students of the English language at The World Islamic Sciences and Education University (WISE) in Jordan. Some recommendations and pedagogical implications are going to be studied in the future by the researchers.

Another study is that “Lexical errors in writing at the end of primary and secondary education: Description and Pedagogical Implications (2015)” by M. Pilar Agustin Liach, University of La Rioja, in Spain. In this study, the researcher presents a study which describes and compares the production of lexical errors at the end of two important educational stages. According to the study, some pedagogical implications are suggested to improve the lexical production of Primary and Secondary school learners in order to prevent and remedy the lexical errors they committed.

The next study, “The Role of Error Analysis in Teaching and Learning of Second and Foreign Language (2015)” is conducted by Aqsa Jabeen. This study aims to investigate errors made by second and foreign language learners. The solution of the study is that students are highly influenced by the rules of their first language.

Lastly, the topic “Approaches to Treating Student Written Errors (2013)” by Thu H. Tran, Missouri University of Science and Technology, Rolla, Missouri University, USA. This study attempts to provide second language writing teachers with some key considerations in providing of giving feedback. Afterward, he suggested a typology of written errors and discussed different ways of offering corrective feedback.

## Research Methodology

The present study follows a cross-sectional design in which the data were taken from a particular group of students at the beginning of their academic year. The collected data were analyzed by the framework of James (1998) in terms of two categories: *lexical error analysis* and *grammatical errors analysis*.

## Participants

A group of third year students (COE), 88 students, from Yangon University of Education made up the study sample. They specialized in English Language Teaching and have joined recently from different Education Degree Colleges in Lower Myanmar to Yangon University of Education as their bridge course. In Education Degree Colleges, English was not taught by the use of a prescribed textbook whereas YUOE in which straightforward and life are regarded as the prescribed text books. In Education Degree Colleges, English has been taught as literature in which grammar and phonetics are being emphasized and Curriculum and Pedagogy Studies, the approaches to teaching English are taught. It is obvious that Education Degree Colleges Students’ English proficiency is not as good as that of students from Yangon University of Education.

## Instruments

Participants had to write an essay on the topic – ‘A sporting event in Myanmar’. In the essay, they had to write the introductory paragraph, write the body paragraphs and summarize the essay in the concluding paragraph. Students had 50 minutes to complete the task. No reference books, dictionaries or any other help was allowed.

**Procedures**

Essay took place in a regular session in the presence of the teacher or the researcher. The collected data are analysed according to the two main categories: *lexical errors* and *grammatical errors* by using the framework of Caral James (1998). The data of the production of *lexical errors* are analysed by two categories: *form* in which *misslection*, *misformation*, *distortion* and *meaning* in which *confusion of sense relation*, *collocational errors* have been included respectively.

In the first stage, selection of a corpus of language, the target students are asked to write an essay i.e. a descriptive essay on the topic, ‘A Sporting Event in Myanmar’. In the second stage of the experiment, afterwards, the errors by the students are identified by making correction of their teacher.

**Data Identification**

The collected data is classified by using the framework of James (1998). The role of the explanation of the psycholinguistics causes of the errors is neglectable in this paper and the evaluation of the errors will be discussed by the researcher. There are **151 total errors** including **73 - lexical errors** and **78 – grammatical errors**.

Firstly, 73 total numbers of lexical errors are found in terms of *form* and *meaning* according to the framework. 10 misslection error, 9 misformation and 28 distortion made 47 *form* errors when 20 *confusion of sense relation* and 6 *collocational error* made 26 *meaning* error in their essay. Table 1 shows the number of the lexical errors that are found in students written scripts.

Table1. The representation of lexical errors found in students’ written scripts

<b>Lexical - 73</b>				
Form – 47			Meaning - 26	
misslection	misformation	distortion	confusion of sense relation	collocational error
10	9	28	20	6

On the other hand, 38 out of 78 tenses errors were found as the most prominent grammatical errors. And then, 19 preposition errors, 13 singular or plural errors, 7 article errors and only 3 adjective errors were found in their performance. Table 2 describes the amount of the grammatical errors that are found in the students’ written scripts.

Table 2. The representation of the grammatical errors found in students’ written scripts

<b>Grammar - 78</b>				
Preposition	Articles	Singular/Plural	Adjectives	Tenses
19	7	13	3	36

The proportion of both types of errors can be observed clearly in figure (1) and figure (2).

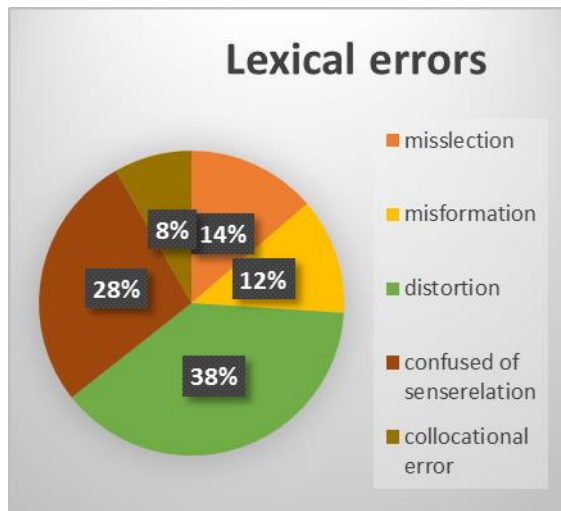


Figure 1: The representation of Lexical errors

The percentage of *lexical errors* and *grammatical errors* can be illustrated by pie charts. Figure (1) describes the proportion of each type of *lexical errors*. The noticeable error was that *distortion* with 42% whereas the proportion of *collocational error* was the least with 8% only. The second mostly error is found as *confusion of sense relation* with 28%. The proportions of *misslection* and *misformation* were fewer than other counterparts with 14% and 12% respectively.

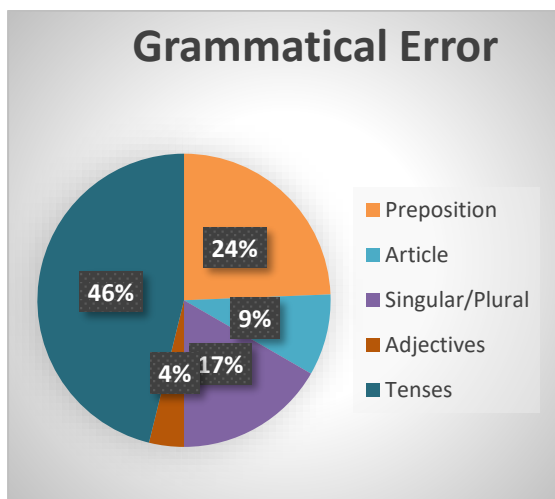


Figure 2: The presentation of grammatical error

The proportion of *grammatical errors* is illustrated in figure (2). The considerable proportion was *the errors of tense* with 48% those students have been studying these grammatical rules along their academic in various way. The proportion of preposition errors was half of the proportion of tenses with 24%. Only 4% of error of adjectives was the least made by students. But the error of singular/plural was 17% and the error of article made by student was 9% respectively.

It is sure that the collected data will contribute to English language teaching at both linguistic and methodological level.

### Findings and Discussion

Many factors are taken into consideration for affecting the language acquisition of the students. It is clear that the analysis of the errors in this research describes how deeply the structure of language is internalized in the human mind.

There are some words, phrases, clauses and sentences extracted from their written scripts for describing different types of errors and the causes of those errors. The words such as 'opoenet' for the words

'opponents', 'spectors' for 'spectators', 'Nowaday' and 'Nowdays' for 'Nowadays', 'participate' for 'participate', 'clender' for 'calendar', 'the oldest from' for 'pagoda complus' for 'pagoda campus' etc were found as distortion of lexical error. It can be assumed that students make these types of errors just because of a slip of the hands not because of the lack of knowledge in the target language in their answers from feedback session. Most of the students make this type of error naturally as their desire is to end up the task on time and they become careless of the spelling.

The phrase 'good combination' is found as a *misselection* of lexical errors that the choice of the word should be 'good cooperation' instead of using 'good combination'. The reason may be the misunderstanding of the meaning and usage of the words between 'combination' and 'cooperation'. Another type of error, misformation, is also found that students make the phrases such as 'a uniquely Burmese sport' instead of 'a unique Burmese sport', 'more attractive and pleasantful' instead of 'more attractive and pleasant'. Inadequate knowledge of the rules of the lexicon results in confusion of sense of relation errors are as follows:

- as possible in the air
- Chilone can be kicked by the steps
- watch it many places in Myanmar
- as well, he added
- to try to keep
- to not to let it drop and so on.

In the language learning process, the insufficient practice of grammatical rules results in grammatical errors in students' writing which were analysed based on the framework by James (1998). The result of the research showed that the errors of tenses were mostly made by the students while the errors of adjectives was the least. Students made the error of tenses as in 'it helped' instead of 'it helps', breaking the rules of present simple tense, 'The event usually lasts for a month and played with a team of six players' instead of 'The event usually lasts for a month and is played with a team of six players.' and 'it held' instead of 'it is held' without following the rules of active and passive forms and so on. Although students are already familiar with grammatical rules, these types of errors were still found. Another type of error is errors of articles as in 'an competitive sport', 'a thousands of peoples', 'sport is form of'. Errors of prepositions are made by the students as in 'to try to keep' instead of 'try to keep', 'benefits fitness games' instead of 'benefits of fitness 'games'. Students also made the errors of adjectives by confusing '-ed' and '-ing' adjectives as in 'I am exciting the performance of Chinlone' instead of using '-ed' adjective.

It is assumed that the errors made by the students would be correlated to the factors causing errors. The result from the feedback session revealed the factors causing errors on students' writing are carelessness, first language interference, teachers' explanation and students' incomprehension about rules of lexicon and grammar. Carelessness may be lack of students' motivation in learning English. It happened because the students had lack of attention or slip of the pen. Students sometimes commit this kind of errors when they wrote hurriedly and did not check their spelling. Another reason, first language interference, led to the errors of misformation and misselection. It was also indicated that the students translated the sentences literally in their first language. If the teacher could not give the rules of grammatical and lexical clearly, it would harm students' comprehension and their performance. As a result, the students made mistakes and errors due to overgeneralization i.e students generalized the rules that they had learnt. They made mistakes and errors in using auxillary, diction, passive form, subject verb agreement, singular and plural nouns, and tenses. Richard (1974) and the researchers stated that incomplete application of the rules makes the learners fail to use a fully developed structure and false hypothesis and do not fully understand a distinction in the target language.

Teachers need to consider how to design their own error treatment strategies as pedagogical precaution. Developing lessons and teaching grammatical points have been attempted to help students understand the rules and issues of grammar that are troublesome for them. Thus, teachers should study aspects of grammar that are particularly problematic for students because of being non-native speakers of English. Corrective error feedback should be provided more than ever via either direct feedback or indirect feedback by teachers or sometimes by peer-review. Students are required by indirect feedback to take more responsibility for their errors to learn more from the process, to acquire the troublesome structures, and to make long-term progress in finding, correcting, and eventually avoiding errors. There is a potential danger of direct feedback that students will be provided the corrected rather than guiding the writer to do his or her editing. Using a set of error code to identify errors as part of indirect correction is helpful for students to

edit their errors either by peer-review or by themselves. Teachers discourage using direct correction of the learners' errors since it may make the learners feel embarrassed in front of the whole class and may demotivate them in the long run whereas peer to peer interaction is beneficial because of friendly relaxed relationships. For the treatment of lexical errors, activities and tasks should be provided in terms of teaching form, meaning and use are focused alternatively to arouse the memorization of students.

Errors in language class are inevitable. Language learners are always expected to make errors in their written work and so are the third-year students from Yangon University of Education. Teachers are conscious of the fact that errors reflect how much the learners have learned and guide the teachers on what next to focus on in language teaching and how to treat their students' errors as they are regarded as 'the sign of learning' as well as 'part of learning'. The old Grammar Translation method which stressed on the avoidance of errors in learners' work has become obsolete. Then, the Communicative Language Teaching (CLT) approach opposed the provision of direct feedback on grammatical errors as students are involved in the class and motivated them to take part in activities in an enthusiastic manner. In communicative language teaching approach, grammar is taught in a way that helps students to build their communicative competence. A communicative grammar lesson allows students the opportunity to practise the target grammar item through specific communicative tasks and activities. Communicative tasks are important because they make students learn target grammar items under 'real operating conditions. Writing activities such as controlled practice are valid ways for practicing grammar communicatively that can support more ideas and resources to help students how to apply their acquired knowledge in the activities.

This study proves that it is essential for students to make errors in the process of learning a foreign language. The systematic analysis of these errors accommodates students with a deep insight into the process of language learning and many solutions to various language learning-related problems as a linguistics analysis. The findings of the present study help the language teachers realize the cause of errors, and provide the opportunities for creating the remedial exercises and activities to diagnose the weaknesses of the students because the students did not learn English as a subject for their language proficiency in their previous academic years in their respective Education Degree Colleges. The results of this research show the teachers how to adjust the level of language proficiency of students from Education Degree Colleges to be able to keep abreast with the students who have enrolled directly at Yangon University of Education.

The findings suggest that continuous in-service training is necessary to develop teachers more professionally. It allows the teachers to aware themselves of the new trends in the field of language education and thus reflect on their practices. It is obvious that the findings of this research will help the course and syllabus designers in designing material and in adopting the techniques and methodologies that take the essential role in making the language learning and teaching more effective.

## **Conclusion**

In conclusion, this study provides evidence that students are still facing problems in choosing and using the appropriate lexicon and tenses in their writing. It shows that their inadequate knowledge of the rules of the target language seems to be the main factor in causing the written production of errors. This insufficient knowledge and exposure of the target language causes them to use incorrect forms of rules for lexicon and grammar. Furthermore, their ignorance of rules leads them to misuse the correct forms of verbs and vocabulary. Creating an opportunity for remedial exercise and designing the most suitable that can cover the needs of the target students in each and every academic year are suggested as the solutions of the study in this research.

The nature of error development is not straightforward. Different trends can be observed that errors are committed by the students for different reasons. But it is assumed that the main reason is a lack of sufficient exposure in their productive, writing as well as speaking. Thus, a shift is necessary for consideration of their language learning process in which approaches to teaching and materials are included.

Some limitations of the study are that it only explored the errors categorized by the modifying theory of James (1998). The study was limited only on the analysis of the three questions as follow.

1. What are the types of errors in written production made by third year students of Yangon University of Education?
2. Why did the students commit these errors?
3. What kinds of remedial treatment of errors should be given for teaching learning process?

There are many areas needed to be covered by future researches as in sources of errors and causes of errors committed by students. There is much scope of research on this area as errors of productive language can be analysed to improve the proficiency of the students.

### **Acknowledgements**

First and foremost, I am really thankful to Dr. Kay Thwe Hlaing, Rector of Yangon University of Education for her permission to conduct this research. I would like to express my gratitude to Dr. Nyo Nyo Lwin, Pro-rector of Yangon University of Education for her guidance and encouragement to complete my research. Furthermore, my gratitude goes to Dr. May Myat Thu and Dr. Khin Khin Oo, Pro-rectors of Yangon University of Education for their encouragement.

I would also like to express my great thanks to Dr. Thi Thi Htun, Professor and Head of the Department of English, Yangon University, for her close supervision and effective guidance to accomplish my research. My words of thanks go to Dr. Aye Aye Thant, Professor and Head of the Department of English, Yangon University of Education, for her kind suggestion and advice. And my respect and gratitude go to Dr. Su Khine Oo, Professor of the Department of English for her valuable guidelines in accomplishing the research.

Last but not least, I would like to convey my thanks to my fellow friends in PhD (Preliminary Class) for their kindness, encouragement and suggestions on my research and all my third years students who had joined the bridge course in 2022-2023 academic year in YUOE.

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# **Impact of Celebrity Endorsement towards Brand Equity with Special Reference to Carbonated Soft drinks.**

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## **Abstract**

The study was measuring “study impact of celebrity endorsement towards brand equity with special reference to carbonated soft drinks brands. Every day customers are exposed to thousands of ads. (Thornson, 1990) and this will hamper companies to create a unique position and receive attention from consumers. Using celebrities can help companies to create unique ads and engender positive effect the attitude and sales intention towards the brand (Ranjbarian, Shekarchizade & Momeni, 2010).Celebrity endorsement has become a prevalent form of advertising in Sri Lanka and all around the world. In Sri Lankan context Kumara Sanagakkara, Mahela Jayawardana, Angelo Mathews, Lasith Malinga, Bathiya and Santhush and also in the world Tiger Woods, Devid Beckham, these names become symbols of the role of endorsers in advertising. According to the Pearson correlation analysis, it illustrates that celebrity endorsement ( $r=0.658$ ,  $p<0.01$ ) has a positive moderate relationship with brand equity. That emphasis that the brand equity (dependent variable) of the carbonated soft drinks increases when the (independent variable) celebrity endorsement gets increase. The significance value is 0.000 which is less than the chosen significance level of 1% (0.01). That illustrates when there is a increases or decreases in the celebrity - product congruency of the celebrity endorsement do have significantly impact to increases or decreases in brand equity of the non-carbonated soft drinks. As per above table, The Pearson correlation has a value of 0.658. This shows positive moderate relationship between celebrity activation and Brand equity. Therefore, the hypothesis developed in chapter three is accepted. Implication is for academics and researchers, that further quantitative research is needed to identify the impact of celebrity endorsement towards brand equity using cross-country and cross-industry applications to predict purchase behavior in various contexts.

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## **Introduction**

Every day customers are exposed to thousands of ads and this will hamper companies to create a unique position and receive attention from consumers. Using celebrities can help companies to create unique ads and engender positive effect the attitude and sales intention towards the brand (Ranjbarian, Shekarchizade & Momeni, 2010). Celebrity endorsement has become a prevalent form of advertising in Sri Lanka and all around the world. In Sri Lankan context Kumara Sanagakkara, Mahela Jayawardana, Angelo Mathews, Lasith Malinga, Bathiya and Santhush and also in the world Tiger Woods, Devid Beckham, these names become symbols of the role of endorsers in advertising. One in four advertisements use celebrity endorsement (Market watch, 2006). Celebrity endorsement influences advertising effectiveness, brand recognition, brand recall. When it talks about Sri Lankan context, most of sports persons are chosen as the celebrities but the problem here is how far it gives value to brand. If we talk about Sangakkra, he endorses for multiple brands such as coca cola, Asian paints, American express, keels and etc. so this leads to dilute the novelty of celebrity endorsement and ultimately effects to credibility of brand. Sometimes he confused the customer because of multi brand endorsement as an example he endorsed the Hutch brand and he then moved to endorse the Airtel this will negatively impact to the brand equity as well as to endorser’s personality image. Companies invest large sum of money to align their brands and themselves with the endorsers. It is questionable that is there any impact of celebrity endorsement on consumer behavior? How do these endorsed brands grabbing the customer attention? Under this study examine the Impact of celebrity endorsement towards brand equity with special reference to soft drink brands.

## **Research Problem**

Nowadays, many companies spend billions of dollars per year on celebrity endorsement to create the good or positive awareness their products and brands. Essential objective of celebrity endorsement is to achieve a favorable impact on brand image. Firms believing that the power of a brand lies in the mind of existing or

potential customers and what they have experienced directly or indirectly about the brand, adopt strategic brand management approach, using celebrity endorsement Amir, Adidam, Prasad, 2011 found that Celebrity endorsement is critical as the consumers' attitude toward celebrity endorsement vary with respect to market and culture and the impact of the celebrity endorsement on brand equity varies from country to country. But here could not found out any prior research conducted on the Impact of celebrity endorsement towards the brand equity with special reference to Sri Lankan context. Soft drink market in Sri Lanka indicate a trend of rise in non-carbonated soft drinks over Carbonated soft drinks (Nielsen,2017) as well as the high cut throat competition of the market place, with that almost every player in the carbonated soft drink market tend to lure the customer attention towards the brand by implementing different marketing strategies to build up the brand equity As most of carbonated soft drink brands tend to implement celebrity endorsement as an effective promotional tool. Researcher willing to examine whether by using celebrity endorsement as strategy the celebrity endorser adds value to the brand equity with reference to soft drink brands and how far celebrities are impact on the brand equity of soft drink brands in Sri Lankan context. "Does the celebrity endorsement could influence the brand equity reference to soft drink brands".

## **Review of Literature**

### **Celebrity endorsement Concept**

McCracken (2015) defined Celebrity endorser as "any individual who enjoys public recognition and who uses this recognition on behalf of a consumer good by appearing with it in an advertisement". According to Schlecht, (2013) Celebrities are people who enjoy public recognition by a large share of a certain group of people whereas attributes like attractiveness, extraordinary lifestyle are just examples and specific common characteristics cannot be observed though it can be said that within a corresponding social group celebrities generally differ from the social norm and enjoy a high degree of public awareness. Nowadays the use of celebrity in advertising is a very common practice. On average, celebrity endorsement is used in every one of five advertisements in the world (Halonen-Knight & Hurmerinta, 2015). From the time when it was identified that use of celebrities has positive impact on purchase, more and more companies tend to use celebrities in their advertising (Hollensen & Schimmelpfennig, 2013). Freidman and Freidman (2016) argue that celebrities are more effective than other forms of endorsers. And Celebrities ostensibly have the capacity to hold viewers' attention and penetrate the clutter of brief and numerous advertising spots that compete for audience attention (Alan R& William 2015).

In research study researcher has identified the celebrity endorsement as the independent variable and brand equity as the dependent variable. When it comes to the celebrity endorsement it is needed to identifying the factors, which mostly important to celebrity endorsement. By using the framework built up by Seno and Lukas (2015), relationship between celebrity endorsement and brand equity is conceptualized. Source based factor (Trustworthiness, expertise, attractiveness) management-based factors (Celebrity multiplicity, Celebrity product congruency) are the celebrity endorsement factors influencing the brand equity (Brand Awareness, Brand Association, perceived quality, Brand Loyalty).

### **Data Gathering Process**

Research strategy based on the survey method and it is conducted through 100 responders. A questionnaire will be designed for individual responders in order to identify the impact of celebrity endorsement towards brand equity; with special reference to carbonated soft drinks. Questionnaire is a formalized set of questions which could obtain the require information from the respondents. It must translate the information need into a set of specific questions that the respondents can understand and willing to answer. (Malhotra, 2016). There are many ways available for data collection and survey which are telephone interviews, email, Surface mail or direct interaction with respondent (Emory & Cooper, 2011). In this research mainly focus on provide questionnaire to responders to fill the questionnaire by themselves. Here in this study used questionnaire method to collect data from selected sample. Primary data is the raw or new data which has been collected by researcher to do a particular research to find out the answer of research question. Primary instrument for data collection in this research is structured questionnaire, which contained open ended and closed questions according to Boyd (2004) the questionnaire method has advantages in terms of Versatility of the method as well as speed and less cost. However, it may have disadvantage as a result of the unwillingness of respondents to provide information, inability of respondents to provide information and influence of the questioning process. When talked about closed end questions it provides advantages such as it is easy to process answers; it enhances the comparability of answer; it makes easier to show the



relationship between variables. Therefore, most questions used in questionnaire would be closed questions for this study. The questionnaire is distributed among the public both physically as well as via social media.

### **Data Presentation and Analysis**

According to the Pearson correlation analysis, it illustrates that trustworthiness ( $r=0.462$ ,  $p<0.01$ ) has a positive weak relationship with brand equity. That emphasis when the Trustworthiness (independent variable) of the celebrity endorsement variable get increase, the brand equity (dependent variable) of the carbonated soft drinks also increases. And that Expertise ( $r=0.421$ ,  $p<0.01$ ) has a positive weak relationship with brand equity. That emphasis when the expertise (independent variable) of the celebrity endorsement variable get increase, the brand equity (dependent variable) of the carbonated soft drinks also increases. And attractiveness ( $r=0.600$ ,  $p<0.01$ ) has a positive moderate relationship with brand equity. That emphasis when the attractiveness (independent variable) of the celebrity endorsement variable get increase, the brand equity (dependent variable) of the carbonated soft drinks also increases. And that celebrity product congruency ( $r=0.423$ ,  $p<0.01$ ) has a positive weak relationship with brand equity. That emphasis when the celebrity product congruency (independent variable) of the celebrity endorsement variable gets increase, the brand equity (dependent variable) of the carbonated soft drinks also increases. And that celebrity activation ( $r=0.524$ ,  $p<0.01$ ) has a positive moderate relationship with brand equity. That emphasis that the brand equity (dependent variable) of the carbonated soft drinks increases when the celebrity activation (independent variable) of the celebrity endorsement gets increase. And that celebrity multiplicity ( $r=0.723$ ,  $p<0.01$ ) has a positive strong relationship with brand equity. That emphasis that the brand equity (dependent variable) of the carbonated soft drinks increases when the celebrity multiplicity (independent variable) of the celebrity endorsement gets increase. And celebrity endorsement ( $r=0.658$ ,  $p<0.01$ ) has a positive moderate relationship with brand equity. That emphasis that the brand equity (dependent variable) of the carbonated soft drinks increases when the (independent variable) celebrity endorsement gets increase.

### **Conclusion and Recommendation**

Research has been limited due to unavoidable some circumstances when conducting the research. The aim of this research is to identify Impact of Celebrity endorsement towards brand equity with special reference to carbonated soft drink brands .and research concluded that there is an impact of celebrity endorsement towards brand equity with special reference to carbonated soft drinks but following limitations has been occurred when generating the results of the research. The sampling method used in this study is non-probability sampling. The data collected could not represent whole population. The collection location will be University and social networking platform. Normally it requires a larger sample size to ensure a representative distribution of the population and to be considered representative of groups of people to whom results will be generalized or transferred. As this research has encountered some limitations, a few recommendations have been suggested for further research due this research is conducted in limited time frame and limited resource availability and with limited scope level of undergraduate. Implication is for academics and researchers, that further quantitative research is needed to identify the impact of celebrity endorsement towards brand equity using cross-country and cross-industry applications to predict purchase behavior in various contexts .In future studies, it can mainly focus on management source based factor as there is only few studies focusing on this factor, especially focuses on celebrity multiplicity factor. Also study should focus on evaluate relationship different demographic groups .such as age group, gender and income level difference. The data analysis would be all rounded. Also in future researches can be conducted to find out the impact of multiple celebrities using vs single celebrity endorsing towards brand equity. Further in future research studies researchers can study on the negative effects of the endorsement such as misleading advertising through celebrities, danger of the negative publicity and the vampire effect.

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# **The Human Right to Development as A Conceptual Framework to International Investments: An Effective Way towards the Protection of Human Rights Related to Business.**

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## **Abstract**

The international community has struggled to come up with a theoretical foundation upon which the complex relationship between business and the defence of human rights may be based. While many methods, like as the Ruggie Framework and the UN Declaration on the Right to Development, have been explored in the past, none have proven sufficient to address pressing continental challenges like land grabbing, environmental degradation, and various other human rights breaches. Although it is still in the works, the proposed Business and Human Rights Treaty offers a path ahead but is not without its detractors from both a content and procedural standpoint. The right to development is to be presented as the conceptual framework for business and human rights. It is understandable that one could feel that this right is being overlooked and that its promise as a framework for striking the correct balance between business and human rights is not being fully utilised. In light of this, the chapter shows how the right to development's core principles of comprehensive development, respect for human rights, participation, social justice, and international cooperation can be justified as the ideal conceptual foundation for conducting business and development. In order to find a long-term solution to the aforementioned problems in the framework of business and human rights, the right to development, which is characterised by the idea of right-holders and duty-bearers, deserves new attention. The link between business and human rights is extremely stressed, and the right to development as a composite right, a right of solidarity, a process, and a right with an external dimension is arguably more successful than other proposed frameworks.

**Keywords:** Right to Development; Business and Human Rights; Conceptual Framework; Development

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## **Introduction:**

In investment initiatives, the argument in favor of development for both the local populations and the general public has repeatedly come up. The state or its agents frequently utilize the rhetoric of such expenditures resulting in the allocation of more modern technology, an increase in exports, and the development of employment in rural areas to justify land investments (BBC, 2015). Additionally, it is sometimes argued that the profits from land investments will benefit both urban residents specifically, improving their standard of living and quality of life as well as rural residents by bringing development to those areas (World Bank, 2015). There is no argument against the reality that everyone will generally strive to advance and see a rise in their standard of living. As a result, there is a right to pursue such a desire, with the state serving as the default duty-bearer. This is the hotly fought Right to Development (RTD).

Along with the right to the environment and the right to peace, the RTD is a member of the third generation of rights (Sachs, 2000). In reality, the RTD's goal is to bring about a new international order that will speed up the process of the full realization of human rights. In order to accomplish this, the RTD grants everyone the right to participate in the process of development and to benefit from it equally and lawfully. Since the 1970s, Marks has underlined how extensively contested and questioned the RTD has been (Marks, 2004). The United Nations Declaration on the Right to Development (hereinafter the Declaration), which was adopted by the General Assembly, has made provisions for the RTD. Other declarations and conferences, the most well-known of which is the Vienna Declaration of 1993, have also recognized the RTD. Despite this broad support, the RTD has faced significant practical obstacles that have prevented its effective implementation (Marks, 2004). According to Lindroos (1999), the RTD's acceptance as a right is further hampered by the RTD's inherent elusiveness and the lack of political agreement on how to implement it.

As early as after World War II, which is the early period of the formation of human rights law, development was seen as being a prerequisite for the effective and comprehensive realization of human rights. There was, however, still no clear-cut claim to an RTD specifically. Unquestionably, the word RTD did not first

occur until the idea of the New International Economic Order emerged. Leaders of developing states used it to demand greater north-south equity as well as economic organizations and arrangements that were advantageous to them (Villaroman, 2010). The RTD began to develop as a human right in the 1970s as a result of the "structural approach" movement, which promoted solidarity rights as a means of resolving international problems. Through the Declaration on the Right to Development, there was worldwide agreement in 1986 to support the RTD as a right to a development process that must correspond to specific norms and for which the state had the primary responsibility. The next section will go into the nature and content of the RTD.

### **The Content of RTD**

According to Piron (Piron, 2002), the Declaration is not a very clear text, and as a result, the RTD's substance is frequently interpreted in a variety of ways. The RTD's content, according to her further argument, should include the following elements: global development, respect for human rights, participation, social justice, and international cooperation. Below, these elements are discussed.

#### **Comprehensive Development**

According to RTD, development should be centered on the human being. According to Articles 2, 4, and 8 of the Declaration, development is not exclusively defined in terms of economic growth but rather as a multifaceted process that includes cultural, social, political, and economic components. According to the Preamble of the Declaration, it has as its goal the creation of "a social and international order in which the rights and freedoms set forth in the UDHR can be fully realized." Therefore, the best way to see the RTD is as a right to a particular path of development, which may differ from state to state and culture to culture. This right also serves as a safety measure because it stipulates that certain standards in terms of human rights and liberties must be adhered to during such a growth process. According to Tomuschat (2003), the RTD's collective structure creates a wide range of legal and factual factors that are outside of governmental authority.

In the Preamble to the Declaration, it is explained that development is a broad-based economic, social, cultural, and political process that aims to improve the well-being of the entire population. It is undeniably clear that the RTD's mandate extends beyond economic growth. Additionally, equal standing has been accorded to social and cultural development. Additionally, it appears that the overarching goal is to ensure the wellbeing of the populace as a whole. The individual is the primary contributor, active participant, and beneficiary of the right, according to article 2 of the Declaration. According to Tomuschat (2003), the RTD is an all-encompassing right that derives much of its substance from other human rights laws.

According to others, the RTD can only be viewed as distinct human rights with added value if the development process encompasses all currently recognized human rights (Sengupta, 2001). It is clear from the RTD's object that the goal is not just to increase a state's GDP or GNP, and development is therefore not just an economic endeavor.

#### **Respect for Human Rights**

According to the Declaration's Articles 1 and 6, every process of development must uphold the fundamental liberties and human rights of every person while also assisting in the realization of rights for all. Furthermore, Article 6 states that a barrier to growth is created when human rights are not respected and upheld. Piron (2002) argues that because the Declaration upholds the idea of the interdependence and indivisibility of human rights, it means that civil, political, and socioeconomic rights all require equal consideration.

Indisputable provisions of the Declaration include equal access to natural resources, open decision-making, and a fair distribution of all the advantages of development. The right to self-determination and the right to sovereignty over the people's natural resources are both mentioned in the Declaration (Villaroman, 2010). Because doing so would violate the right to economic self-determination, development cannot be carried out in a way that becomes a kind of economic coercion for the local communities or just the weaker one (Villaroman, 2010).

#### **Participation**

Another essential component of the RTD is the inclusion of people, who are the focus of development as advocated by the CA. While article 1 expressly states that "individuals and peoples have a right to participate in, contribute to, and enjoy" development, article 8 promotes public engagement. According to Article 2 of the Declaration, involvement must be voluntary, active, and meaningful. It indicates that the Declaration obliges nations and the international community to design development strategies that put people first as the central concern and decision-makers.

### **Social Justice**

According to the Declaration, development is a tool for advancing social justice and eradicating social inequities. Development processes should support social justice, which is characterized by a fair distribution of the benefits to all people, in accordance with article 2(3) of the constitution. The RTD is also seen as a document that upholds the idea of everyone having an equal opportunity to receive fundamental services and resources, which eventually results in the successful removal of social inequities.

### **International Cooperation**

The Declaration's Articles 3 and 4 mutually support the need for adequate international conditions, as well as pertinent international policies and collaboration. According to Article 7 of the Declaration, this particular demand includes the need for a New International Economic Order as well as global peace and security. The most contentious elements of the RTD, according to Piron (2002, 11), are the need for suitable international development strategies and successful international cooperation.

### **The nature of the RTD**

While enumerating the RTD's primary topics may appear rather simple, describing the RTD's nature can be difficult. Questions about the RTD's nature are frequently posed. The RTD is what kind of right? Who benefits from such a right and who is responsible for its obligations? How well-functioning is the RTD's implementation, enforcement, and monitoring? All of these issues undoubtedly spark heated discussions and disagreements among academics (Oduwole, 2014). It has frequently been dismissed as not being a real human right and referred to as the "right to everything" (Kirchmeier, 2006: 10).

Gibson contends that the RTD's ambiguous and amorphous scope makes it difficult for the already-existing system of human rights (Gibson, 1990: 9). The RTD has a composite definition as an entitlement that may be claimed by individuals as well as groups, contrasting to the conventional conception of human rights as being individualistic in character, according to Ngang, Kamga, and Gumede (Ngang *et al.*, 2018). The nature of the RTD is clarified in the section that follows.

### **A Human Right**

The RTD is viewed as a composite human right to a specific development process that ensures the realization of all human rights, including civil, political, and socioeconomic rights (Kirchmeier, 2006). The UN's 6th Report of the Independent Expert on the RTD reiterates this claim by highlighting its tenet of indivisibility and interdependence (UN ECOSOC, 2004). Because of this, the RTD is frequently described to as a solidarity right, which "espouses a shared or collective responsibility for the realization of human rights" (Vandenbogaerde, 2013).

International cooperation is thought to be necessary to address problems like climate change, global migration, disaster risk reduction, and the post-2015 development agenda (UN HRC, 2014). Indeed, the Symposium on the Study of New Human Rights: The Right to Solidarity shows that the concept of solidarity has been debated at the UN level.<sup>408</sup> The concept of solidarity acknowledges our shared destiny and the desire to empower each person to exercise their rights and take on their fair share of responsibility for preserving and advancing humankind's future (UNESCO, 1980). It was believed that solving development-related issues with a sense of solidarity could lead to the creative growth of every country, every community, and every person.

The RTD as a solidarity right possesses the potential to guarantee equitable development, as aptly summarized by UNESCO as the right for every person to profit from complete development that involves having access to human capabilities, as well as the need for individuals and nations to work together for development.

The right to development (RTD) has been exposed to many interpretations, according to Piron (2002: 11), but the three that are the most well-known and frequently applied ones are the right of people impacted by development to realize their fundamental rights through processes of development and the economic dimension of the right to self-determination. The RTD's unique ability to be viewed as both a composite human right and one with a component of community solidarity deserves to be underlined.

The RTD's added significance also lies in the fact that it may be viewed as the totality or aggregate of all currently recognized human rights. According to Vandebogaerde (2013), the process "requires the realization of all rights, not just the realization of human rights individually." In a similar vein, Sengupta has also referred to the RTD as a vector of all the various rights, suggesting that an improvement to the RTD will result in improvements to all other rights. The High-Level Task Force on the Implementation of the RTD believed that this right included the right of individuals to "constant improvement of their well-being," demonstrating once more how the RTD safeguards the development process.

### **Right Holders**

The Right to Development (RTD) has been reaffirmed as "a universal and inalienable human right and an integral part of the fundamental human rights" in the Vienna Declaration and Programme of Action (VDPA). It is a right that will be gradually realized as a process, but it does not provide states the option of imposing any retrogressive actions without a sufficient and legal justification. According to Villaroman (2010), the RTD was once seen of as a people's right that could be asserted against the entire world community.

In the end, it became a human right for each individual rather than just a right of the people covering only global issues. Unquestionably, even if the RTD is best categorized as a communal right, the right to benefit from development and the right to participate in the process are similar to the individual rights that are contained therein (Sengupta, 2001). Therefore, it is maintained that the RTD has an internal and an exterior component, and that it has the potential to be both an individual right and a community right. It should be emphasized that the definition of the word "peoples," which was once understood to refer to the entire population, has evolved to refer to a specific group within the population.

### **Duty-Bearers**

The RTD's principal duty-bearer is still the state. The state must establish "national and international conditions favorable to the realization of the RTD" in accordance with the Declaration. States are required to implement "all necessary measures for the realization of the right to development" at the national level, which includes formulating development strategies that are relevant and appropriate. States must ensure that everyone has access to natural resources equally and benefits from a wealth distribution that is fair to all.

The responsibilities that states have to the RTD are likewise of an international nature. According to item 4 of the Declaration, international collaboration is the main obligation. Therefore, states should work together to implement international development policies that are in everyone's best interests, including local communities and rural populations, regardless of financial or economic differences. To create equal economic interactions and environments internationally, all states must cooperate (Sengupta, 2001). According to Bunn (Bunn, 2000), the fact that developing states receive preferential treatment when they are a party to any international economic relationship is evidence of the principle of international cooperation in fulfilling the RTD.

### **Conclusion**

The RTD has been utilized to promote such a development strategy. By concentrating on the RTD's scope, beneficiaries, and justiciability, the vague and contested nature of the RTD was analyzed. Additionally, it was stated that the RTD has a great deal of potential to offer a normative framework on which comprehensive development may be accomplished. The chapter emphasized the RTD's composite nature, its status as a solidarity right, its nature as a process, and its outward aspect. It is debatable if the RTD, which is a solidarity and composite right, can address the impacted human capabilities. The thesis that developed from this chapter is that RTD, as a human right, can be the catalyst for effective investment that upholds human rights, on the basis of which development can be accomplished with a sincere and effective consideration for human rights.

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# An Evaluation of Green Human Resource Management Practices in a Governmental Organization in Mauritius.

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## Abstract

Organizations need to prioritise environmental issues and address the challenges that arise due to organizational activities. The green HRM (GHRM) concept is a vital practice that can help reduce the negative effects of environmental degradation and enhance organizational performance and environmental sustainability. Scholars have recently been paying attention to this concept, but there is still a research gap in the topic of GHRM practices and organizational performance. This case study evaluates the impact of GHRM practices on organizational performance in a governmental organisation in Mauritius. The study found that the organisation integrates environmental elements in its mission and vision. However, there is a lack of green actions being performed in the public sector, so green HRM practices needs to be adopted more aggressively. A quantitative approach was implemented, and a questionnaire was distributed to the employees of the organization, with 153 questionnaires filled out properly. The study indicated that there is a positive association between two independent variables (green practices, green training and development) and organizational performance. However, no statistical relationship exists between the other independent variables (green recruitment and selection and green compensation and benefits) and organizational performance. The study has been concluded by highlighting the significance of GHRM practices in the organization and providing a scope for further studies.

**Keywords:** GHRM Practices, Green Recruitment and Selection, Green Training and Development, Green Compensation and Benefits, Organisational Performance

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## Introduction

Recently, environmental protection has been a major concern across the globe. Environmental consciousness is invading rapidly within every aspect of life and is providing the workplace a new dimension (Ethrsea, 2022). Since organisations play a significant role in protecting the environment, they are required to address to environmental challenges to create a competitive value. Accordingly, one of the developing systems and practices to ameliorate environmental sustainability is the green human resource management (GHRM) concept. GHRM refers to the process to plan and apply the practices as well as policies of HRM aligned with the environmental sustainability objectives of an organisation in order to promote eco-friendly behaviour of employees and to boost organisational performance. Organisations implement GHRM practices by performing green initiatives, green recruitment and selection, green training and development, green compensation and benefits as well as green performance management. These practices provide both employees and the industry a sense to boost work efficiency and increase employees' involvement and dedication towards the environment and organisation (Baliyan & Fatima, 2021). One can say that the development of organisational strategies to maintain environmental sustainability is noteworthy as there is a positive impact on the organisational performance of industries. Even though there has been an increasing academic attention on GHRM practices, research gaps have been highlighted on its impact on the organisational performance. Therefore, this study evaluates the ways GHRM practices affect organisational performance in a public sector and recognizes that these practices can bring tremendous progress on environmental sustainability in the workplace. This research study has considered only the three core green HR functions, namely green recruitment and selection, green training and development, and green compensation and benefits, to be able to assess in-depth the extent to which these activities are being implemented in the chosen organisation. A public sector organization has been chosen due to the lack of research regarding this topic in public sectors. Armed with this information, it has been noted that the concept of GHRM is a crucial corporate strategy which needs to be developed within organisations.



## **Definitions of Green Human Resource Management**

Uddin and Islam (2016) defined GHHRM as eco-friendly HR policies and practices which will support companies to acquire their monetary objectives by means of environmental branding along with safeguarding the environment from any adverse effect which might occur through the policies and activities of the companies (Mwita, 2019). GHRM practices are the programs utilised by firms to minimise the effect of operations and industrial waste on the environment in order to enhance the company's sustainable environmental performance (Hmeedat & Albdareen, 2022). In light of these definitions, GHRM practices are actions taken by the employees in a company to acquire its goals without harming the environment as far as possible, and these eco-friendly initiatives are also included in the HR functions. Halawi and Zaraket (2018) highlighted that these activities include e-filing, sharing-transport, job sharing, recycling, virtual interviews, telecommuting as well as utilising energy-saving devices. Also, some green actions are utilising both sides of the paper while writing or printing, making use of natural light, reducing the use of bulbs turned on while working, shutting down computers when not in use and reusing some items like bottles or bags. HR managers play an important role in assisting their firms to attain their objectives to become an environmentally responsible company (Halawi & Zaraket, 2018). It has been analysed that industries have tremendous advantages and attain several growing opportunities in going green. Firstly, GHRM practices intend to develop and apply the work strategies that boost the performance rate of the firm to maintain sustainability. These promote the development of the environmental factors in the business as well as build up concern about the environment in the employees. By providing organisational sustainability and developing innovative ideas in terms of better productivity, GHRM allows the employees to attain better job satisfaction and commitment. Following this, these practices minimise employee retention, therefore increasing competitive value of the firm along with boosting overall performance of employees (Baliyan & Fatima, 2021). Additionally, green HR initiatives allow firms to look for substitute means to reduce costs without dissipating their capability in green economy. As a result, the efficiency created by GHRM practices reduce operational costs and allow professionals of the company to realise their corporate social responsibilities more efficiently (Halawi & Zaraket, 2018)

## **Green Recruitment and Selection**

Recruitment and selection are considered to be crucial in an organisation as selecting the right candidate for the job in the company will promote good organisational performance. Mwita (2019) defined green recruitment and selection as the activity of implementing sustainable methods, tools and technologies in attracting and choosing the right candidate for the vacant job position in an organisation. Mishra (2017) also explained that this process consists of adopting environmentally friendly methods for recruitment, for example online interviews together with utilising less paper during the recruitment tests, as well as managing and assessing the green attitudes which support the environment for selection (Hmeedat & Albdareen, 2022). In line with this, e-mail, online applications and resumes can be used from different employment sites. Additionally, Hosain and Rahman (2016) highlighted that in green selection, the selection assessments also can be paperless to some extent. To exemplify, practices such as behavioural observation, interview, presentation in which fewer paper is required, can be conducted. He also opined that applicants who are more environment-friendly and are encouraged to keep office and environment green could be given preferences. Hiring applicants who are eco-friendly will assist in enhancing environmental and organisational performance of companies (Mwita & Kinemo, 2018). In addition, e-recruiting minimises energy usage and pollution related to manufacturing, transporting and recycling paper products. On top of that, since paper-related tasks, for example, resumes, onboarding and advertising are reduced, there is direct cost savings (Mwita, 2019).

## **Green Training and Development**

Another crucial HR practice is training and development that allow companies to improve and retain their employees' talent and skills, which in turn improve the productivity of the business. Green training and development as a process to design education and create awareness among workers and combine environmental sustainability objectives into the company's program (Fapohunda, Genty & Olanipekun, 2021). Numerous studies have highlighted the benefits of training and development. Green training and development practices develop a beneficial connection between employees' green involvement and CSR. Furthermore, this practice helps companies to educate workers and allows them to take part in environmental problem-solving skills (Fapohunda *et al.*, 2021). Prior studies have highlighted the fact that

green learning and development are effective GHRM practices, which facilitate the consistent growth of green management in many organisations. Hosain and Rahman (2016) specified that training and development practices must involve programs, workshops as well as sessions which develop and assist workers to gain knowledge in green management skills. Also, Genty (2021) posited that the training and development programmes of employees should prioritise aspects related to the 10 environments, for example, energy consumption, safety, recycling and waste management (Fapohunda *et al.*, 2021).

### **Green Compensation and Benefits**

Compensation and benefits, another compulsory function of HRM, contribute greatly to the success of a firm as the workforce remains motivated in the workplace and are able to perform well. Green compensation and benefits as financial and non-financial reward systems to attract, retain and encourage workers to devote to the environmental objectives (Ardiza, Nawangsari & Sutawijaya, 2021). Green compensation and reward management is an approach of motivation to strengthen workers' conduct through green skills development and success related to environmental programs through monetary incentives that is increment in salary or bonuses, or non-monetary incentives, including special leaves and donations (Barinua & Dike, 2022). Workers might be more inspired through non-financial incentives via green pay and reward, for example recognition and appreciation (Aburahma *et al.*, 2020). As such, it is noted that ways to include this practice in a company must be designed since it is beneficial to both the employees and the firms. Hosain and Rahman (2016) illustrated that the compensation system should consist of rewarding green expertise and achievement, and special bonuses can be granted to the workers for their efforts in contributing to green initiatives, such as maintaining cleanliness, keeping health and safety standards, utilising less paper, amongst all. This practice has resulted in a greater efficiency in boosting the interest of workers and commitment to environmental programs (Hmeedat & Albdareen, 2022). Also, Qureshi, Singh and Almessabi (2020) stated that in the system of green compensation and benefits, the attendance of workers, the quality of output and performance are linked with automatic formulae in software, and the generation of compensation as well as transfer takes place automatically. This implies that employees are compensated through electronic systems. In essence, there is no need to make any use of paper. This activity leads to reduced carbon footprints.

### **GHRM Practices and Organisational Performance**

Adopting GHRM practices can assist a firm in improving the environmental awareness of workers and their capability to carry out sustainable practices, guiding workers to create a common green strategy and values as well as developing the cohesion of organisations (Zhang, Luo, Zhang & Zhao, 2019). Halawi and Zaraket (2018) in their research identified the following impacts of green HRM for companies: the acquisition of good perception, reputation and good will, cost-effectiveness, better performance with cheaper products, better consumption of power as well as economically useful, which in turn lead to profits and improve the return on investments. All the workers in a company should be encouraged to take part in environmental decision-making activities as their participation contributes their capabilities or knowledge to environmental performance (Geetha & Sammanasu, 2020). In addition, Ardiza, Nawangsari and Sutawijaya (2021) in their research opined that organisations can design programs to encourage the workforce to adopt green environmental behaviour at work. Scholars are of the view that the main GHRM practices namely, green hiring, green training and green rewards, can boost organisational environmental performance, and thus, help organisations create a competitive advantage (Rawashdeh, 2018). The initiation of green recruitment promotes the participation of workers for monitoring competency in the long run and updating them about the green company-wide actions, for example, minimising wastage and greenhouse gases. Consequently, there is an advancement in the firm's environmental performance (Jabbar & Abid, 2015). Companies should create an integration between their recruitment policy and environmental approaches along with selecting employees who understand the values and vision of the company related to the environment (Hmeedat & Albdareen, 2022). Workers participating on periodic green learning and development practice would form environmental consciousness as well as diminish the negative environmental effects of the firm (Fapohunda *et al.*, 2021). Furthermore, Yafi, Tehseen and Haider (2021) in their research study postulated that green training aids to form an optimistic attitude, to adapt a more dynamic approach on various greening actions, and hence develops skills in the workers that diminishes wastes and economises energy. Hosain and Rahman (2016) suggested that training supervisors must utilise more online course materials, as an alternative to printed handouts, books and booklets to minimise consumption of paper. Green rewards bring about a high level of job satisfaction that significantly boosts environmental performance (Jabbar & Abid, 2015). Workers must be compensated based on the outcome of the green project within the company to promote environmental-friendly actions among the workforce.

Besides, green rewards can be implemented to promote green creativity and innovation by offering reward-based opportunities to workers for proposing green work projects affiliated to their occupation (Ghour, Mani, Khan, Khan & Srivastava, 2020).

### Research Methodology

A quantitative research methodology was used for the purpose of this research. Given that the main purpose of the study was to analyse the impact of the different GHRM functions namely recruitment and selection, training and development and compensation and reward management systems on organizational performance. There were 1800 employees in the organization and the sample size was calculated by using the Slovin Formula at a 90% level of confidence. A sample size of 153 employees was obtained and the questionnaire was administered among these 153 employees at different levels of the organization so as to ensure representativeness of the population.

### Data Collection

Data for the research was collected through a survey that was administered among the employees of the Mauritian public sector organization. It was a self-administered questionnaire which was left with the respondents and the questionnaires were collected within a week. The questionnaire included questions to know about the existence of green HRM practices in the organization and the impact of these functions on the organizational performance.

### Data Analysis and Discussion

#### Background of respondents

The data was analysed using the SPSS software. There were 40% male and 60% female among the respondents and the age group of the respondents was distributed as follows:

21.6% of the respondents are between 18-25 years old, 47.7% are between 26-35 years old, 13.7% are between 36-45 years old and 17.0% are between 46 years old and above. As far as the educational level is concerned, 5.9% of the participants have studied till secondary level, 3.9% have cleared diploma, 51.6% have completed till undergraduate level and 38.6% have done postgraduate course and above. In terms of experience of respondents in the organization, 50.3% have worked in the organisation between 0-5 years, 41.2% have worked between 6-10 years, and 8.5% have worked between 11-15 years.

#### Green recruitment and selection

The findings revealed that the organisation advertises its vacancies online. However, the high rate of negative score for ‘accepting job applications through e-mails’ demonstrates that the organisation does not implement this activity. Also, it has been observed that the organisation barely looks for candidates engaging in green actions. The analysis demonstrated that the organisation does not e-mail the selected applicants and does not conduct the interview process via video-conferencing and calls. Hence, the organisation does not apply the green recruitment and selection practices, besides advertising its vacancies online.

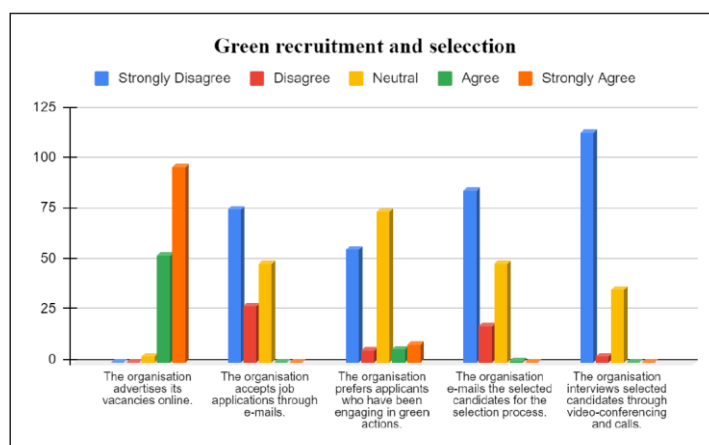


Fig1: Frequency chart for Green Recruitment and Selection practices in the governmental organisation

### Green Training and Development

As per the results obtained, training requirement analysis regarding environmental needs are moderately conducted. Most of the employees answered that the training programs are done via digital platforms. However, the rest contradict this statement, since they might be barely receiving any training programs from their division or the training programs are conducted through other mediums. The analysis indicated that the training provided to the workers are mostly not related to environmental aspects. Also, only 51% agreed receiving the chance to attend workshops to broaden their green management skills. This shows that based on their job position, the employees are provided with required training and development opportunities. Majority of the responses highlight that the employees are educated about the effects of their behaviour on the environment. Thus, the percentages of the activities confirm that green training and development practices are implemented to some extent

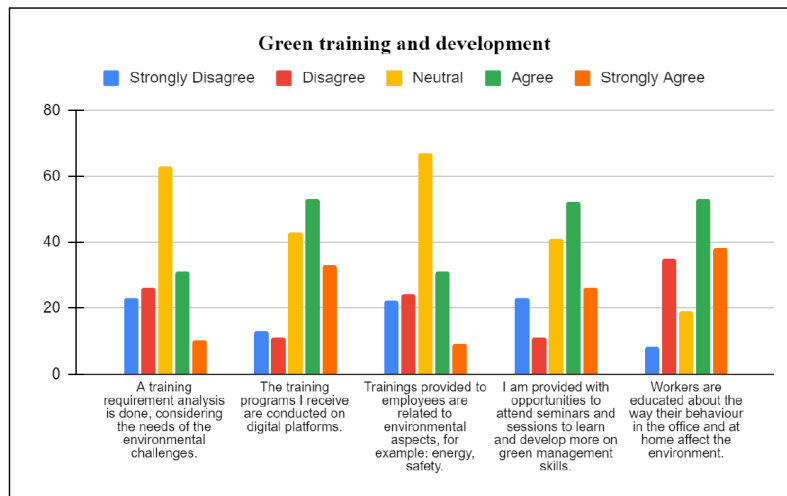


Fig 2: Frequency chart for Green training and Development Practices in the governmental organization

### Green Compensation and Benefits

The analysis shows that the employees do not receive any financial and non-financial incentive for participating in green actions. A small percentage (9.2%) indicated for receiving non-financial rewards, which might be in terms of recognition in the department, positive feedback from high-level workers or trust from the workers in the division of the organisation. The findings for ‘receiving appreciation from colleagues regarding green actions performed’ differ for each employee: 49.0% responded positively while 17.6% are undecided and 33.4% disagreed. This might be due to the differences in perceptions and level of involvement in green actions. Majority of the employees indicated that they receive their compensation and benefits through electronic systems. Therefore, the green compensation and benefits practice mainly adopted in the organisation is the electronic payment system.

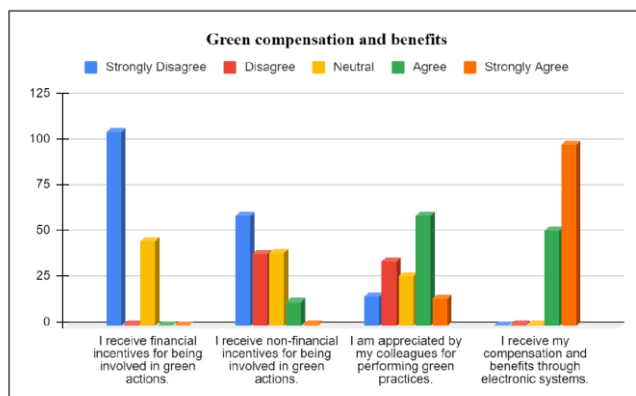


Fig 3: Frequency chart for Green Compensation and Benefits

### Regression Analysis

A multiple linear regression analysis was performed for the different variables and its equation is as follows:  $y = \alpha + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots$ .  $Organisational\ performance = 1.479 + 0.270x_1 - 0.058x_2 + 0.375x_3 + 0.044x_4$  Where:  $x_1$  = green practices;  $x_2$  = green recruitment and selection,  $x_3$  = green training and development,  $x_4$  = green compensation and benefits. Based on the data, the following conceptual model can be represented for the research.

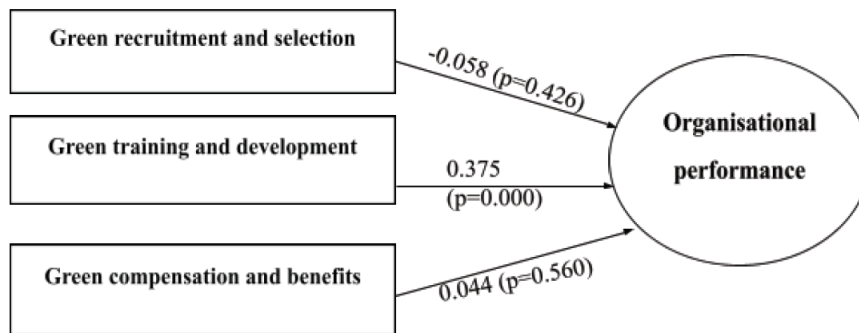


Fig4: Conceptual Model based on the regression analysis

The result showed that there is a relationship between green training and development practices and organizational performance in this governmental organization as the p value is less than 0.01 whereas there is no relationship between green recruitment and selection and green compensation and reward system in the organization as the p value is greater than 0.1. The outcome corroborates the idea of Kim, Kim, Choi and Phetvaroon (2019), who mentioned that green training and development are vital tools to promote environmental management practices in a corporation (Yafi *et al.*, 2021). The training of employees is crucial as this mobilises them with competencies required for decision-making processes regarding GHRM practices. Green training develops the desire of the employees to participate in environmentally friendly efforts (Kuo, Khan, Islam, Abdullah, Pradana & Kaewsang-on, 2022). Thus, it has been determined that these activities boost up organisational performance. The result also confirms that the governmental organization do not have too much green recruitment and selection and reward management systems as seen in the descriptive analysis part.

### Conclusion

The research showed that the governmental organization is not implementing Green recruitment and selection and this can be explained by the fact that most recruitment and selection in Public sector organization in Mauritius is done by the Public service commission which is an independent body in Mauritius. Hence, the organization may not have lot of say in the different recruitment and selection practices. Moreover, Green compensation and reward management systems can also be implemented in the organization and this can help to improve its impact on the organisational performance by reducing certain cost related in printing the pay slip of employees. Employees of the governmental organization feel that green training and development practices are being used in their organization and they feel that these practices are contributing in enhancing organizational performance. This research has shown that there is a relationship between green training and development practices and organizational performance in a public sector organisation. However, this study was only carried out in one governmental organisation and the research can be improved by doing similar research in other governmental organisation and private sector organisations. The results may be different due to the different contextual factors in place and the different HRM practices in the two different sectors.

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# High School Teachers' Teaching Practices for Students' 21st Century Skills

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## Abstract

The main purpose of this study is to investigate the high school teachers' teaching practices for students' 21<sup>st</sup> century skills. The research design was a descriptive design and participants were 305 high school teachers in the academic year 2023-2024. High school teachers were from two townships of Bago Region (East). As a research instrument, a questionnaire which was based from Hixson, Ravitz and Whisman (2012) was used. Concerning research findings of descriptive statistics, among the mean values of students' 21<sup>st</sup> century skills, the highest mean value was collaboration skill (22.69) and using technology as a tool for learning skill was the lowest (18.02). Moreover, most of high school teachers practiced students' 21<sup>st</sup> century skills at the moderate level. According to the results of independent samples t test, there were no significant differences of high school teachers' teaching practices for students' 21<sup>st</sup> century skills between two groups in terms of their teaching experiences and their specialization. When the responses of two open-ended questions were identified, most of high school teachers were experiencing challenges such as inadequate instructional time, inadequate instructional resources, inadequate media supporting, inadequate number of teacher, deficiency of classroom and large class size, being unfamiliar of teachers with new curriculum and insufficient training for teachers. The most possible ways to overcome the challenges were providing trainings for teachers how to practice students' 21<sup>st</sup> century skills and supporting multi-media and instructional resources. Therefore, findings from this study will help in implementing curriculum reform concerning with 21<sup>st</sup> century skills.

**Keywords:** 21<sup>st</sup> Century Skills, Learning and Innovation Skills, Career and Life Skills, Digital Literacy Skills, Teaching Practices

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## Introduction

Human resources have been recognized as the most important of all resources. They are of special importance in education (Okafor, 2018). Without employing and effectively utilizing the services of teachers, the education sector will need to raise the successfulness. In the 21<sup>st</sup> century, all societies are experiencing the biggest challenges such as overpopulation, overconsumption, increased global competition and interdependence, melting ice caps, financial meltdowns, wars and other threats to security and so on. Moreover, unlike the 20<sup>th</sup> century, the 21<sup>st</sup> century jobs demand higher levels of knowledge and applied skills. However, most of the today's students graduating from secondary schools, technical colleges, and universities are sorely lacking in some basic skills and applied skills of the 21<sup>st</sup> century: communication, critical thinking and problem solving, professionalism and work ethic, collaboration, applying technology, leadership and project management (Santos, 2017).

As a result, "21<sup>st</sup> century skills gap" is costing business a great deal of money in finding highly skilled talent and in bringing new employees up to required skill levels through costly training programs. Therefore, the term "21<sup>st</sup> century" has now become the integral part of education because 21<sup>st</sup> century skills are keys to the empowerment of children and adolescents to deal with the issues and concerns related to their lives (Trilling & Fadel, 2009).

Developing countries are facing challenges involving a shortage of skilled workers. Therefore, governments are trying to develop in every area, especially in education to meet the socio-economic development and the needs of the 21<sup>st</sup> century. Since the new curriculum emphasizes 21<sup>st</sup> century skills as learning outcomes, opposing to a content-based approach and rote memorization used in the 20<sup>th</sup> century, teachers have the responsibilities to practise students' 21<sup>st</sup> century skills in their teaching.



## Related Philosophies of 21<sup>st</sup> Century Skills

21<sup>st</sup> century skills are consistent with the educational philosophies of constructivism, and humanistic school of thought (Wilcox, Liu, Thall & Howley, 2017).

Constructivism refers to the idea that learners construct knowledge for themselves. Each learner individually or socially constructs meanings they learn. Characteristics of constructivism are (1) active learning is better than passive learning, (2) learning takes place best in group or social situations, (3) learners should engage in authentic activities, (4) learners should relate new information to that which they already have, (5) learners should reflect or think about what is being learned, (6) teachers must provide learners with scaffolding assistance needed for them to progress, (7) students are expected to resolve what they thought that may be contradictory with new information.

Connectivism is a learning theory that attempts to explain learning in terms of sharing information across people in a digital world and learning occurs through the connection of information sources (digital nodes) in a constantly changing environment. Learning is affected by technology because technology has performed many operations such as information storage and retrieval. There is no need for formal institutions because the focus of connectivism is on the individual participants, networks and the flow of information and the new forms of knowledge (Bates, 2019). Humanistic school of thought emphasizes to improve students' attitudes and values. Humanists maintain that education should be based upon the needs and interests of learners. Thus, education should be as personal as possible. Teaching according to the interests and needs of children creates healthy social and emotional classroom environments characterized by acceptance and respect. Doing these things enhances learning (Cruickshank, Jenkins & Metcalf, 2006).

## 21<sup>st</sup> Century Knowledge and Skills

Although there are many 21<sup>st</sup> century knowledge and skills frameworks, this study is based on three frameworks namely, partnership for 21<sup>st</sup> century skills framework, innovative teaching and learning (ITL) framework and deeper learning framework.

Partnership for 21<sup>st</sup> Century Skills Framework. 21<sup>st</sup> century skills can be classified into three groups, namely learning and innovation skills, career and life skills, and digital literacy skills. Learning and innovation skills consist of critical thinking and problem solving, communication and collaboration, and creativity and innovation. Digital literacy skills include information literacy, media literacy, and information, communication and technology (ICT) literacy. Career and life skills are flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability, and leadership and responsibility (Trilling & Fadel, 2009). Figure 1 depicts the partnership for 21<sup>st</sup> century skills framework.

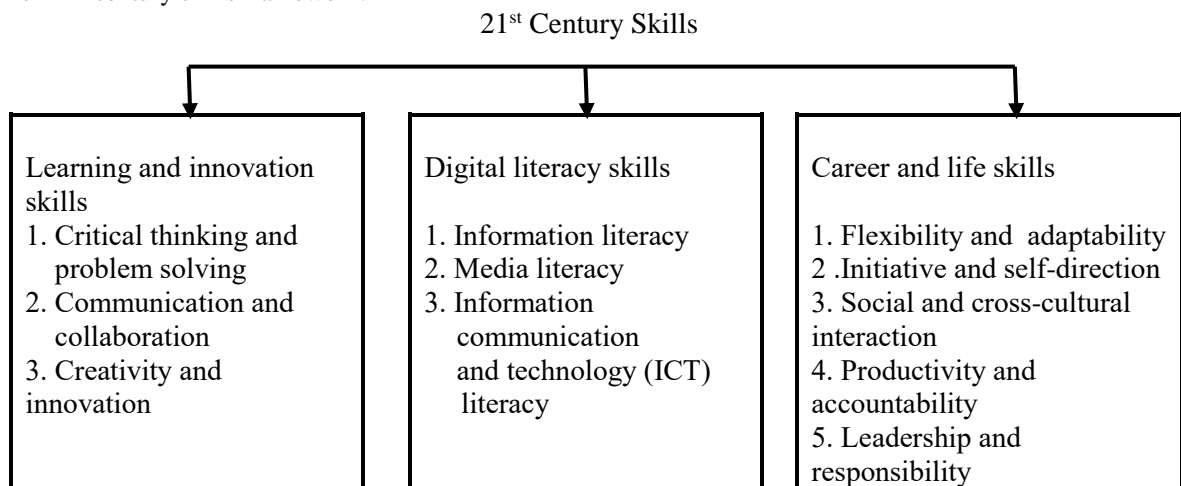


Figure 1: Partnership for 21st century skills framework

Innovative Teaching and Learning (ITL) Framework. Students' 21st century skills include broad skills that are seen as important goals of innovative teaching practices. These skills are knowledge building, problem-

solving and innovation, communication, collaboration, self-regulation, and use of ICT for learning. Figure 2 depicts the innovative teaching and learning framework (Shear, Novais, Means, Gallagher & Langworthy, 2010).

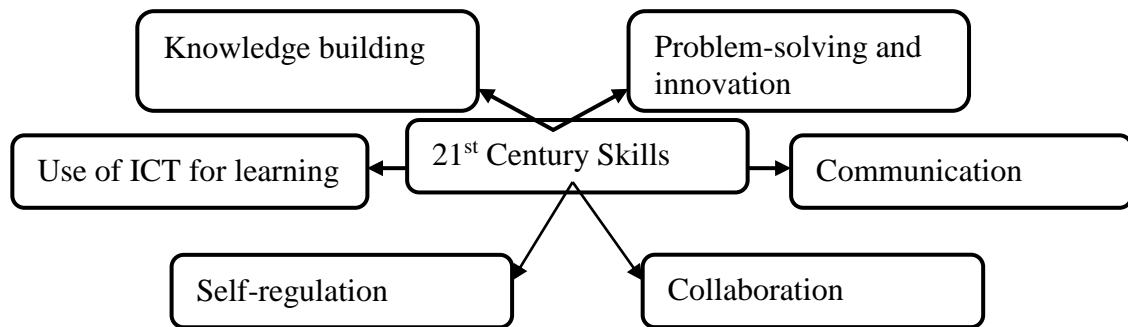


Figure 2: Innovative teaching and learning (ITL) framework

Deeper Learning Framework. Deeper Learning competencies are essential to prepare students to achieve at high levels and succeed in college, career and civic life: master core academic content, think critically and solve complex problems, work collaboratively, communicate effectively, and learn how to learn (The William and Flora Hewlett Foundation, 2010). Figure 3 depicts deeper learning framework.

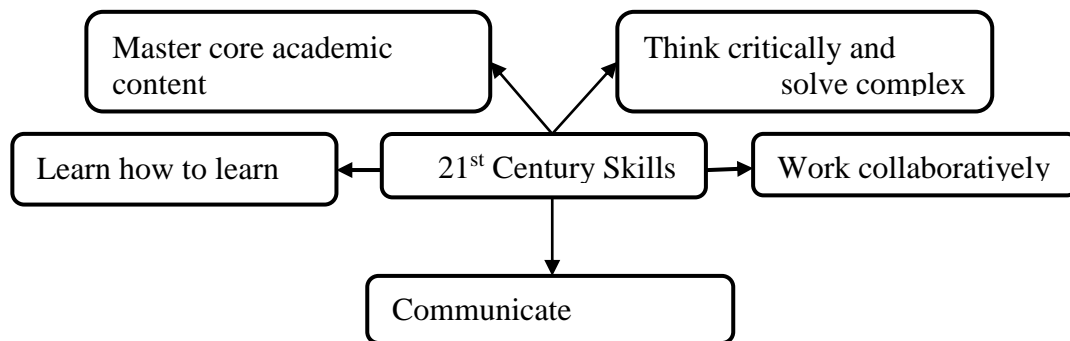


Figure 3: Deeper learning framework

### Measuring 21<sup>st</sup> Century Teaching and Learning

21<sup>st</sup> century skills including in this survey are critical thinking skill, communication skill, creativity and innovation skill, self-direction skill, global connection skill, local connection skill, and using technology as a tool for learning skill.

Critical thinking skill refers to students being able to analyze complex problems, investigate questions for which there are no clear-cut answers, evaluate different points of view or sources of information, and draw appropriate conclusions based on evidence and reasoning.

Collaboration skill refers to students being able to work together to solve problems or answer questions, to work effectively and respectfully in teams to accomplish a common goal and to share responsibility for completing a task.

Communication skill refers to students being able to organize their thoughts, data, and findings; and share these effectively through a variety of media, as well as orally and in writing.

Creativity and innovation skill refers to students being able to generate and refine solutions to complex problems or tasks based on synthesis, analysis, and then combining or presenting what they have learned in new and original ways.

Self-direction Skill refers to students being able to take responsibility for their learning by identifying topics to pursue and processes for their own learning, and being able to review their own work and respond to feedback.

Global connection skill refers to students being able to understand global issues including awareness of geography, culture, language, history, and literature from other countries.

Local connection skill refers to students being able to apply what they have learned to local contexts and community issues.

Using technology as a tool for learning skill refers to students being able to manage their learning and produce products using appropriate information and communication technologies (Hixson, Ravitz & Whisman, 2012).

### **Purpose of this Study**

The main purpose of the study is to investigate high school teachers' teaching practices for students' 21<sup>st</sup> century skills. The specific objectives of this study are as follows.

1. To investigate high school teachers' teaching practices for each 21<sup>st</sup> century skill of students
2. To examine the differences of high school teachers' teaching practices for students' 21<sup>st</sup> century skills between two groups in terms of their teaching experiences
3. To examine the differences between science teachers' and art teachers' teaching practices for students' 21<sup>st</sup> century skills
4. To study the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills
5. To investigate the possible ways to overcome the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills
6. To make suggestions for high school teachers to improve their teaching practices for students' 21<sup>st</sup> century skills.

### **Methodology**

The research design used for this study was a descriptive research design. The questionnaire included eight dimensions: critical thinking skill (Item No. 1 to 6), collaboration skill (Item No. 7 to 12), communication skill (Item No. 13 to 18), creativity and innovation skill (Item No. 19 to 24), self-direction skill (Item No. 25 to 30), global connection skill (Item No. 31 to 36), local connection skill (Item No. 37 to 42), using technology as a tool for learning skill (Item No. 43 to 48). Moreover, two open-ended questions for challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills and the possible ways to overcome these challenges were used.

All high school teachers (305) from Kyauktaga Township and Nyaunglebin Township within the academic year 2023-2024 were selected by means of cluster sampling method. The study consisted of five research questions.

- To what extent do high school teachers practise for each 21<sup>st</sup> century skill of students?
- Are there any significant differences of high school teachers' teaching practices for students' 21<sup>st</sup> century skills between two groups in terms of their teaching experiences?
- Are there any significant differences between science teachers' and art teachers' teaching practices for students' 21<sup>st</sup> century skills?
- What are the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills?
- What are the possible ways to overcome the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills?

Using SPSS (Statistical Package for the Social Science) Version 22, the descriptive analysis was employed to calculate mean, standard deviation, frequency and percentage for the quantitative data. The independent samples *t* test was used to examine whether there were any significant differences between two groups in terms of their teaching experiences and their specialization. Moreover, thematic analysis of responses to open-ended questions was used.

### **Findings and Discussion**

This section includes the survey data and discusses the results based on the data. 305 high school teachers participated in this survey and gave some suggestions.

To what extent do high school teachers practise for each 21<sup>st</sup> century skill of students?

Based on the participants' survey data, the highest mean score was (22.69) for collaboration skill. Therefore, high school teachers practiced students' collaboration skill at the highest level. The lowest mean score was (18.02) for using technology as a tool for learning skill. Thus, high school teachers practiced students' using technology as a tool for learning skill at the lowest level among the other skills. The average mean score of high school teachers' teaching practices for students' 21<sup>st</sup> century skills was (20.83).

Accordingly, it can be assumed that more than half of high school teachers practised students' 21<sup>st</sup> century skills.

**Table 1: Mean scores of high school teachers' teaching practices for students' 21<sup>st</sup> century skills**

Students' 21 <sup>st</sup> Century Skill	N	Mean	SD	Minimum	Maximum
Critical Thinking Skill	305	22.31	3.21	10	30
Collaboration Skill	305	22.69	3.21	11	30
Communication Skill	305	21.29	3.32	10	30
Creativity and Innovation Skill	305	21.91	3.22	10	30
Self-direction Skill	305	21.36	4	11	29
Global Connection Skill	305	18.33	3.97	8	30
Local Connection Skill	305	20.75	3.94	8	30
Using Technology as a Tool for Learning skill	305	18.02	4.4	6	30
Average		20.83	3.66	9.25	29.88

*Note.* N = Number of high school teacher, SD = Standard Deviation.

Are there any significant differences of high school teachers' teaching practices for students' 21<sup>st</sup> century skills between two groups in terms of their teaching experiences?

High school teachers were divided into two groups: high school teachers with teaching experiences of eighteen years and below, and above eighteen years. There were (150) high school teachers with teaching experiences of eighteen years and below, and (155) high school teachers with teaching experiences of above eighteen years. Based on the results, there were no significant differences between the mean scores of teaching practices for students' 21<sup>st</sup> century skills of two groups at the probability level .05. Therefore, both the teachers who have more teaching experiences and less teaching experiences practised students' 21<sup>st</sup> century skills at the same level.

**Table 2: *t* values for high school teachers' teaching practices for students' 21<sup>st</sup> century skills in terms of their teaching experiences**

21 <sup>st</sup> Century Skill	Group	N	Mean	SD	MD	<i>t</i>	df	<i>p</i>
Critical Thinking Skill	≤ 18 years	150	22.63	3.03	0.62	1.675	303	.095 (ns)
	> 18 years	155	22.01	3.36				
Collaboration Skill	≤ 18 years	150	22.68	2.97	-0.01	-0.028	303	.978 (ns)
	> 18 years	155	22.69	3.44				
Communication Skill	≤ 18 years	150	21.02	3.46	-0.53	-1.410	303	.160 (ns)
	> 18 years	155	21.55	3.17				
Creativity and	≤ 18 years	150	21.68	3.38	-0.45	-1.221	303	.223

21 <sup>st</sup> Century Skill	Group	N	Mean	SD	MD	t	df	p
Innovation Skill	> 18 years	155	22.13	3.04				(ns)
Self-Direction Skill	≤ 18 years	150	21.43	4.11	0.13	0.283	303	.777 (ns)
	> 18 years	155	21.30	3.91				
Global Connection Skill	≤ 18 years	150	18.17	3.99	-0.32	-0.696	303	.487 (ns)
Local Connection Skill	≤ 18 years	150	20.75	4.15	-0.01	-0.018	303	.986 (ns)
	> 18 years	155	20.76	3.74				
Using Technology as a Tool for Learning Skill	≤ 18 years	150	17.74	4.65	-0.54	-1.078	303	.282 (ns)
	> 18 years	155	18.28	4.16				
Total	≤ 18 years	150	166.10	22.86	1.42	-0.441	303	.242 (ns)

Note. N = number of high school teacher, SD = significant difference, MD = mean difference, ns = not significant.  
\**p* < .05.

Are there any significant differences between science teachers' and art teachers' teaching practices for students' 21<sup>st</sup> century skills?

High school teachers were divided into two groups, science teachers and art teachers. There were (157) science teachers and (148) art teachers in this study. According to the results, there was a significant difference between the mean scores of science teachers' and art teachers' teaching practices for students' using technology as a tool for learning skill at the probability level .05. Therefore, science teachers did more practices for students' using technology as a tool for learning skill than the art teachers. However, there were no significant differences in other skills. Thus, science teachers and art teachers practised these skills at the same level.

**Table 3: *t* values for science teachers' and art teachers' teaching practices for students' 21<sup>st</sup> century skills**

21 <sup>st</sup> Century Skill	Group	N	Mean	SD	MD	t	df	P
Critical Thinking Skill	ST	157	22.05	3.31	-0.54	-1.482	303	.139 (ns)
	AT	148	22.59	3.08				
Collaboration Skill	ST	157	22.67	3.38	-0.03	-0.092	303	.927 (ns)
	AT	148	22.70	3.04				
Communication Skill	ST	157	21.41	3.34	0.25	0.662	303	.509 (ns)
	AT	148	21.16	3.30				
Creativity and Innovation Skill	ST	157	21.80	3.44	-0.23	-0.629	303	.532 (ns)
	AT	148	22.03	2.97				
Self-Direction Skill	ST	157	21.18	4.18	-0.37	-0.819	303	.412 (ns)
	AT	148	21.55	3.81				

Global Connection Skill	ST	157	18.17	4.14	-0.34	-0.735	303	.463 (ns)
	AT	148	18.51	3.80				
Local Connection Skill	ST	157	20.59	4.28	-0.35	-0.781	303	.435 (ns)
	AT	148	20.94	3.56				
Using Technology as a Tool for Learning	ST	157	18.53	4.58	1.06	2.103	303	.036*
	AT	148	17.47	4.16				
Total	ST	157	166.39	22.96	1.69	-0.222	303	.54
	AT	148	166.96	21.27				

Note. N = number of high school teacher, SD = significant difference, MD = mean difference, ST = science teacher, AT = art teacher, ns = not significant.

\* $p < .05$ .

What are the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills?

According to the results, the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills were inadequate instructional time and too much lessons, insufficient instructional resources, weakness of students' prior knowledge, lacking students' interest in schooling, assessment system focusing rote learning, inadequate media supporting, insufficient number of teacher, deficiency of classroom and large class size, being unfamiliar of teachers with new curriculum and inadequate training for teachers, and language deficiency.

**Table 4: Percentage of the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills**

No.	Statement	N	Frequency	Percentage (%)
1.	Inadequate instructional time and too much lessons	305	60	19.7%
2.	Insufficient instructional resources	305	106	34.8%
3.	Weakness of students' prior knowledge	305	40	13.1%
4.	Lacking students' interest in schooling	305	55	18%
5.	Assessment system focusing rote learning	305	93	30.5%
6.	Inadequate media supporting	305	85	27.9%
7.	Insufficient number of teacher	305	90	29.5%
8.	Deficiency of classroom	305	52	17.1%
9.	Being unfamiliar of teachers with new curriculum and inadequate training for teachers	305	44	14.1%
10.	Language deficiency	305	25	8.2%

What are the possible ways to overcome the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills?

According to the results, the possible ways to overcome the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills were revising the amount of lessons in new curriculum, supporting the instructional resources, supporting multi-media and technology infrastructures, recruiting high school teachers, providing trainings for teachers how to practise students' 21<sup>st</sup> century skills, changing the assessment system, and regulating class size.

**Table 5: Percentage of the possible ways to overcome the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills**

No.	Statement	N	Frequency	Percentage (%)
1.	Revising the amount of lessons	305	53	17.4
2.	Supporting instructional resources	305	95	31.1
3.	Supporting multi-media and technology Infrastructures	305	106	34.8
4.	Recruiting high school teachers	305	98	32.1
5.	Providing trainings for teachers how to practise students' 21 <sup>st</sup> century skills	305	82	26.9
6.	Changing the assessment system	305	75	24.6
7.	Regulating class size	305	84	27.5

### Conclusion:

For the 21<sup>st</sup> century students, expertise in 21<sup>st</sup> century skills and knowledge should be the outcome of 21<sup>st</sup> century teaching and learning so that students are supported to succeed in their future careers and life (Sural, 2017). Future generation of leaders in developing countries should be independent thinkers who can successfully lead their society. Thus, this study investigated high school teachers' teaching practices for students' 21<sup>st</sup> century skills. According to the results of this study, the administrators recognize the extent of high school teacher' teaching practices for students' 21<sup>st</sup> century skills, the challenges faced by high school teachers in teaching students' 21<sup>st</sup> century skills and the possible ways to overcome these challenges. Moreover, principals and teachers will implement Continuous Professional Development (CPD) program in their schools.

### Acknowledgements

We would like to render our respectful gratitude to Dr. Kay Thwe Hlaing (Rector, Yangon University of Education), Dr. May Myat Thu (Pro-Rector, Yangon University of Education), Dr. Khin Khin Oo (Pro-Rector, Yangon University of Education), and Dr. Nyo Nyo Lwin (Pro-Rector, Yangon University of Education). We also appreciate to all teachers who participated actively in this study.

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# Driving Sustainable Growth: Exploring Digital Marketing Adoption among SMEs in Mauritius for Innovation and Resilience

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## Abstract

Sustainable development has emerged as a powerful, albeit divisive, idea for business, presenting both advantages and disadvantages. Small and Medium Enterprise (SME) growth in Mauritius is not an archaism to the economy of Mauritius, as it dates back to the 1960s, as a result of a growing interest in building SMEs in recent decades. Undoubtedly, SMEs are important for economic growth and job creation, and it is becoming increasingly clear that fostering SME growth is crucial for reducing poverty. Imperatively, innovation must be the guiding principle since it has the power to transform a company's vulnerability into any type of opportunity. Investigating the difficulties that SMEs are expected to face in this respect is essential given that the concept of sustainability is quickly and increasingly taking importance with customers. The main aim of this study is investigating the extent to which SMEs in Mauritius are utilizing digital marketing tools as innovative tools to sustain their businesses, and the common factors that can undermine the use of digital marketing among entrepreneurs in SMEs. While there has been a growing literature on sustainability for SMEs, little empirical studies were conducted to better understand how technology can support SMEs growth and remain sustainable in the long run. The findings of this study shows that entrepreneurs engaged in sustainable businesses perceived many which can undermine their ability to sustain their businesses. The implications and recommendations are discussed in this study.

**Key words:** SMEs, Sustainability, Ease of Use, Attitude, Knowledge of Entrepreneurs, Access to Technological Knowledge, Mauritius

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## Introduction

Remote communication has been transformed by networking technology, making it more affordable and more accessible than ever, opening remarkable accessibility and enormous opportunities intended for exposure for both entities and enterprises. The innovation that began with the web has continuously flourished through many forms of communication, such as phone applications and the social media (SM) platforms, obviously. It is a common to say that digital marketing (DM) has enforced changes upon on operation of the corporate environment. Businesses can use these technologies to have access to opportunities which were previously inaccessible to them. It helps companies improve their dignity, develop strategic relationships, and improve contacts with distributors and consumers.

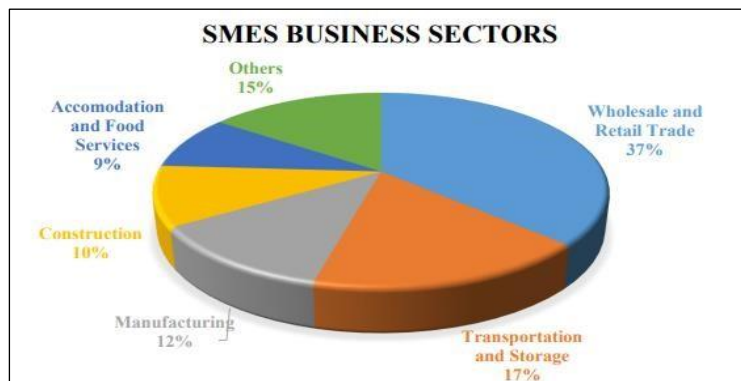
Small and medium-sized enterprises (SMEs) in Mauritius have a lot of commerce prospects in the digital world, and they have the potential to expand quicker and contribute more to the Mauritian market. Indeed, DM will enable Mauritian businesses to overcome the historic and geographic disadvantage of being far from the marketplace. Throughout the light of mounting electronic expenditure and turbulent economic rivalry, digital engagement is an easy option for SMEs looking to seize market possibilities, gain competitive advantage, and develop creative product line. SMEs who are not yet digitally involved must be aware of the relevance and usefulness of DM, while those who are digitally involved but not yet at higher standard must work to improve their digital engagement. The aim of this study is to investigate the extent to which Mauritian SMEs utilize DM as their marketing tool as a mean to remain sustainable. To achieve this objective, this study investigate the extent to which ease of use, attitude, and knowledge of entrepreneurs as well as on the access of technological knowledge of the company along with digital transformation, has an implication on Mauritius SME success and development. This study also attempts to assess the level of understanding of SMEs on the use of digital marketing tools to help their businesses grow. It is expected that the outcome of this study will improve our understanding of the emerging age of digital connectivity for present and future businesses.

## Literature Review

There is no concise description of small and medium-sized companies within Mauritius, but the commonly used is that from the Small and Medium Enterprises Development Authority (SMEDA) Act 2009, distinguishing among micro, small and medium-sized businesses. According to the Act, a micro-enterprise is described as a business with an operating margin of under 2 million rupees. The category small company is attributed to the company with overall revenues of only about Rs 10 million and ultimately a moderate firm with yearly revenue exceeding Rs 10 million but below Rs 50 million.

Some main areas in which SMEs are engaged in Mauritius are illustrated in figure 1 and are mainly concentrated on wholesale and retail trade, transportation and storage, manufacturing, construction, and accommodation and food services.

**Figure 1**



Source: *Networking and internationalisation of SMEs in SIDS economies (2019)*

Digital marketing has altered the notion of developing technology over decades. New advertisers are confronted with an increasing number of social media platforms and digital resources and a growing emphasis of linked customers. Chaffey (2013) described digital marketing as the process of establishing and sustaining customer relationships across new technology such as e-mail, internet, directories, mobile and online TV, with the goal of facilitating the sharing of thoughts, Products and services which fulfil each party's aims. As a whole, Digital marketing is a known tactics to be accessible digitally. In recent years, the given that most online consumers have increased substantially implies that the company must have an elevated perception on digital marketing. Digital marketing claimed to have benefits over conventional marketing. Firstly, Digital marketing tools are claimed to be more economical than conventional marketing tools. For e.g., an email marketing or social media advertising may send a promotional information to the consumer for a lower cost of a conventional advert while also reaching a larger turnout.

One advantage of digital marketing, as per Faulkner (2013), enables employers actively drive prospective customers to use the channels to research more, evaluate, then review their product, as well as consume plus receive suggestions that is accessible to the target market, which aim to boost the company's profitability. Unlike conventional advertisements, digital marketing enables the firm to observe whatever does and does not functioning for them and subsequently make the necessary adjustments to enhance their efficiency (Chaffey, 2013). The perfect example of this would be companies using Analytics for analysis of online traffic and determine by what means customers visit, browse, and purchase its products online.

According to the author Chaffey (2013), usage of technology to assist promotional operations in gaining consumer information while addressing specific demands is defined as DM. Businesses throughout the established countries have recognised the significance of DM. For enterprises to be sustainable, combination of digital and conventional techniques will have to be amalgamated to better fulfil the requirements of their consumers (Parsons, Zeisser, Waitman 1996). Some of the most prominent marketing tools utilized regarding digital marketing are as follows:

### ***Email Marketing***

Emails have consistently been proven as a predominant program online. Email marketing is said to be one of the earliest aspects of online marketing, with information being delivered to the market segment via digital methods. As a matter of fact, one fifth visitors come access these firms' site due to clicking of the contact connection located in the online correspondence (Vo, 2014).

Email marketing is known to be incredibly lucrative, observable, extremely personalized as well as customized on wider gage. These factors combine to make email marketing the highly effective digital marketing tools. This technique is used by businesses to create on-going relations through existing plus future clients. Email marketing ought to be capable of retaining consumers while also assisting a firm towards increasing overall profitability.

### ***Online Publicity***

Internet marketing is meant to be shown in the form of digital advertisements, advertising banners and placed on different websites to increase awareness of the company's website (Vo, 2014). Stokes (2013) says that internet publicity may be increased by focusing and placing into specific contexts on certain geographical markets in the region. Online publicity is reachable around many categories, as well as everyone holds its particular benefits and drawbacks. None remains recognized as ideal type of online advertisement since the approach used by the marketer will ultimately rely upon his/her requirements, the style of webpage as well as the targeted audience. Pay-Per-Click marketing, banner ads and Sponsorships are the most common kinds of internet marketing.

### ***Mobile Marketing***

Since computers, iPad, and cell phones with Broadband internet acquire prominence and focus, it looks natural for SMEs should investigate mobile marketing techniques that would assist them in fighting aggressively against its rivals. Mobile marketing was described by Kaplan (2012) as "whichever marketing business conducted in via a shared Web toward which clients are always linked by means of a private mobile gadget." Businesses that are experienced regarding digital apps is in a better situation to reduce the likelihood of disaster within mobile initiatives. SMS marketing, user responsive websites, and QR Codes merchandising are highly prevalent types of mobile advertising used by SMEs to create brand awareness.

### ***SEO - Search Engine Optimization***

SEO is termed by Davis (2006) as "a skill, art, or science for generating online traffic to websites," while Stoke (2013) stated that such an approach is utilized to help a business to be listed higher on search engine listings. Such marketing strategy entails working utilizing parameters established through different search engines to guarantee that such search results recognize it when consumers input a keyword linked to a product or facility.

SEO plays an important part in acquiring new customers since it ensures that the official website or promotion strategy appears within google search, allowing the organization to achieve its objectives market. It is thought a search engine that a customized homepage is built to provide transparency. Stokes (2013) argued that these characteristics ensure a pleasant customer encounter, which further means the SEO does have a key role towards retaining customers.

### ***Content Marketing***

Consumers no longer rely on conventional advertisements and have a tendency to keep away ads by tv along with magazines. These have become so familiar with online browsing that they can browse about any details, and businesses must recognize this shift and look for new ways to reach off toward consumers. This may be accomplished through content promotion. According to Pulizzi (2012), content marketing is a promotional strategy that produces and delivers relevant and useful information with the goal of attracting and retaining a core demographic and putting in place positive consumer behaviour. Such method of marketing approach may be implemented across all marketing channels that is both traditional as well as digital and at every stage of the purchase cycle, from awareness through retention. Large corporations, such as Microsoft and Coca-Cola, as well as small businesses, employ content marketing (Vo, 2014).

### ***Social Media Marketing***

Since an era, consumers have been receiving information concerning the company via speaking to the sales representative in person. Through the upswing of the digital era, digital ads and emails have been the predominant way to interact among businesses and their clients. Even though several of these media platform are still essential components of effective marketing tactics, social media should still be considered (Miller, 2013).

The influence of SM in social bodies is as spectacular as the Internet development of the 1990's, as per Durkin et al (2013). Kaplan and Haenlein (2010) characterize SM as "a range of Web apps which leverage mostly on technological or conceptual fundamentals underlying web 2.0 and enabling content generated by users to be created and exchanged." Reed (2011) further said that SM is typically any online community and resource that individuals may use free of charge for content exchange and sharing. Official estimates at the beginning of 2017 revealed 2,789 billion operating social media handlers. As such a 21 % rise has been indicated by Chaffey (2017) compared to the previous year.

In the opinion of Solomon (2013) the following components should always be well-thought-out: community, communication channel, and connectivity. It is assumed that the social media will mean different things to different people. The social aspect talks of social media as a way of living the communal lives of the digital groups, i.e., by posting images, likes, comments, review, stories among others as well as freely interacting and engaging publicly with one another (Gongora, 2016).

### ***Social Media Platforms:***

As conclusion, several research like Gongora (2016), Newman (2013) and Gligorijevic and Leong (2011) said: small and medium-sized companies tend to embrace social media marketing tactics, such as creating a fan page, handling digital ads and campaigns, improving customer care and feedbacks as well as handling community affairs. Besides, in new environment of today, several social media channels are present for small and medium-sized companies to utilize for a variety of purposes, and the most prominent are as follows:

#### ***Facebook***

As per latest numbers in January 2017, Facebook is now the world's utmost popular as well as widely visited social media site, having 1,871 billion prominent handlers (Chaffey, 2017). Geoff (2014) states therefore that Facebook seems to be a useful alternative for company since it enables an enterprise to grasp a larger target market and to establish sustainable partnerships. Furthermore, businesses may market or hire to advertise their Fan page and evaluate the performance regarding contents online. (Chitwood, 2014).

#### ***Twitter***

Twitter remains the popular social media site among organizations who currently wish to meet a target demographic and expect instant replies (Gongora, 2016). To reach the target demographic with the message, the organization should have simple, appropriate, and reliable information. A notable benefit of Twitter is that it permits a firm to formulate as well as distribute the content endlessly as well as to enhance customer engagement in anticipation (Chitwood, 2014).

#### ***LinkedIn***

Levy (2013) states that LinkedIn is the utmost broadly utilized SM portal among the corporate sector for building connections. Gongora (2016) further claimed that LinkedIn has been providing the finest performance within consumers all around 35 years old. Such SM network is considered to be mostly of significance to service providers and retailers since it is not much a multimedia tool. Chitwood (2014) mentioned that the network of connections of the company is the highly respected information on LinkedIn. LinkedIn gives consumers the ability to explore and consult their preferences.

### ***Pinterest***

Pinterest is the "visual" forum that enables individuals to pin or share photos and videos and this social media network differs from others because it adds greater emphasis to latest posts and subject matter. According to the estimation of Geoff (2014), Pinterest possesses nearly 70 million operating handlers, with a majority of 68% females. Furthermore, Levy (2013) mentioned that the SM network remains mainly useful to companies that offer visual imagery, for example, food, graphic construct, as well as apparel. Once operators pin and re-pin the messages, it becomes easier to sort the content into various categories using the necessary key phrases (Chitwood, 2014).

### ***Instagram***

Having 400 million involved handlers in year 2016, Instagram remains the largest picture focused SM site on the Internet (Gongora, 2016). Instagram is also a graphic SM site that helps people to upload images and videos. Like Pinterest. It is an SM forum for which creative segments are mainly good and thus not ideal for any field. Instagram's exclusive filters and editing options are popular. Since hashtags are clickable and the combined sharing features for Facebook and Twitter, businesses may use hashtags to render Instagram content more accessible (Chitwood, 2014)

### ***Google +***

Google+ is now expected to be the most exponentially growing social media site, and in 2016, it acquired around 400 million users. Gongora, 2016 stated that, it is ideal for organizations in which SEO needs to gain additional consumers. Companies must connect Google+ subject to their websites for rankings boost of search engines, as everything on Google+ helps firms become noticeable on Google (Chitwood, 2014). Honigman (2014) stated Google+'s major benefit is its convergence with other Google sites including Gmail and YouTube.

Empirical Findings on SMEs and DM

### ***Ease of use***

Raymond et al (2005) investigated the usage of the Internet and the Browser among e-businesses operation of manufacturing SMEs and to extent to which it could be integrated. They also investigated the extent to which cultural integration of e-business led to SMEs' rise and foreign expansion. They found that generally, compared to large companies, small to medium-sized businesses have little experience and little means to modify their processes to meet emerging market needs flexibly, such as process modifications or new company partners incorporation. Thus, the complexity of Browser marketing applications requires an easy-to-use, self-explanatory business method in SME. Eid, Trueman and Ahmed (2006) investigated B2B businesses, to set the basis for benchmarking and good practice when the best elements of conventional and modern Internet marketing activity are combined. It was concluded in their findings that easy-to-use technology solutions can have a positive impact on SME use of digital Marketing. But businesses and consumers needed elements of "security" as well as "easy-to-use"

### ***Entrepreneur's attitude and Knowledge towards Digital Marketing***

Storey (1994) conducted a study to better understand the small business sector on how training could help businesses to grow. It was noted in the study that the evolution in innovative practices in the business world appears to be occurring where sufficient variables, which are the traits of the entrepreneurs and the characteristics of the company were combined. Another study by Rogers (1995) aimed to identify the fundamental properties and meaning of an invention related to its propagation and found that modern spread of technological innovation has defined several features which can decide a person's willingness to innovate and to incorporate for their own motives. In another exploratory study by Poon and Swatman (1999) to investigate small businesses and internet commerce issues, it was found that SME owner was use of internet for their commercial activity depended on their organizational ability and structure. Another study by Jean, Han & Lee (2006) explored the determining factors responsible for competitive e-business acceptance by SMEs and found that the decision- making to adopt digital marketing was mostly made at managerial level of the organization. The more skilled and creative a CEO was, the higher the probability of using digital marketing was most likely especially among small businesses. A variety of factors affecting the implementation of digital marketing depended on ownership type and the level of awareness.

### ***Technical knowledge availability among SMEs***

Dennis & Bara (2002) conducted a study to assess bricks to clicks understanding of e-consumers. It was noted that SMEs ought to understand the presence of professional know-how in the company in order to address technological developments. In the study by Jeon, Han, & Lee (2006) it was found that firms with more IT and e-business technologies personnel had a higher diversity of digital marketing applications than firms with low IT awareness. Wagner, Fillis & Johansson (2003) have analysed the e-business and e-supply policies for SMEs and among their findings, it was discussed that the IT experience of the workforce would also have a significant influence on ecommerce acceptance. It was also found that in the case of SMEs, most companies had no budget provision for structured learning of their staff or for recruiting specialists for ITs. This in turned hindered the acceptance in their industry of digital marketing applications.

### *Use of Digital Media*

Yaseen, Al-Adwan & Al-Madadha (2019) conducted a study to determine the level of digital marketing adoption and investigated the essential requirement of digital marketing adoption among SMEs companies. Their finding revealed that digital marketing adoption was still in its early stage of adoption in the Jordanian context. The majority of SMEs limited their usage of social media and email marketing as a common tool for digital marketing. Moreover, lack of human skills, awareness of what digital marketing and technological tools that drives digital marketing were found to be the dominant factors to adopt digital marketing among SMEs companies. Recently, relying on the diffusion of innovation (DOI) framework and Technology-Organization-Environment (TOE) theory, Patil, Navalgund & Mahantshetti (2022) conducted an exploratory study to digital marketing adoption by start-ups and SMEs in the context of India, and found that environmental & technological factors have a substantial influence on the digital marketing adoption. Variables such as relative advantage, compatibility, cost, perceived use, competitors and effective communication to customers had a positive impact on the digital marketing adoption by start-ups and SMEs.

The following hypotheses are also examined in the current context of SMEs in Mauritius:

*H1: Entrepreneurs who find it difficult to use digital marketing will be less likely to use digital marketing in their businesses*

*H2: Entrepreneurs who have a positive attitude and knowledge towards digital marketing will more likely use digital marketing in their businesses.*

*H3: Entrepreneurs who have technical knowledge of digital marketing will be more likely to use digital marketing in their businesses.*

### **Research Methodology**

The methods used to reach the aims of this study are outlined in this section. The study focused upon descriptive research, with the dependent variable being the adoption of DM among SMEs, and the independent factors were ease of use, entrepreneurs' knowledge and technical knowledge availability of the firm. It relied on two types of data sources, primary and secondary. Primary data implies to raw data which are directly attained from the very factual experience. In this case, a survey questionnaire was appropriate techniques for gathering reliable data for investigating the issue. Hence, this research focuses on SMEs in Mauritius and involves a formal survey to elicit opinions from the SME owners on the adoption of digital marketing. At the time of the study, the population of SMEs in Mauritius stood to about 124,972 as per the latest census of Economic activities carried out in 2018. A probability sample was used to assure a predetermined possibility of selection for members of the SME population. Random sampling has been utilized to identify the participants. A questionnaire was devised to gather data based on a targeted group of 152 SMEs in Mauritius. The questionnaire was distributed online and consisted of four sections, with a total of 35 questions. The questions were derived from past studies and adopted for this study. A pilot study was the initial phase for the research and it helped to design and modify the major study. As such, a pilot survey was done with a selection of 15 SME to identify any issues with the style or question. Since no relevant problem existed, a comprehensive analysis was carried. The

information gathered was processed and evaluated to aid in the achievement of the study's goals and objectives. Following the analysis of the data, appropriate recommendations and conclusions are provided. Only 152 responses were recoded out of 250 questionnaires submitted to SMEs. This yields a response rate of approximately 60%. The statistical software SPSS version 20 (Statistical Package for Social Science) was utilized to analyse data as well as generate various tests. The initial pilot test was to done to validate the accuracy of the responses to the study. Following this procedure, a descriptive statistical test was performed, including the mean and variances of numerous questions, the correlation coefficient was used to define hypotheses, and test the strength and effect of the association between the use of DM in Mauritius SMEs. However, there were various limitations to the study which ultimately affected the statistical analysis.

## **Findings**

### ***Demographic Profile of SMEs***

The questionnaire's initial component focused on the demography of the SME sector. This mainly includes information such as location, position, gender, age, level of education, and business field, among others. With the commercial development in the rural areas around Mauritius, it can be denoted that more entrepreneurs were from rural places. Majority of SMEs are owned and handled by the owners itself, representing a percentage of 71 %. A response rate of 17% was denoted as managers and 12% owners from the sample of 153 SMEs.

Senior respondents among the other categories tend to be lower, since they are the toughest from the other age demographics to approach. Nonetheless, significant survey respondents were the population aged 18-30 representing 30% of the population and 31-40 years representing 52%. The minor percentage of 16% and 2 %, represented the number of those interviewed among 41-50 and over 50, respectively.

It was observed that 55% of respondents are male and 45% female respondents. Male respondents have a higher rate than female responders. This might be related to the fact that women make up a smaller percentage of SMEs personnel and proprietors. However, compare to the past 10 years, women have been actively progressive in the respective sector. Even though man is dominant in the sector, there is relatively no big difference among the female and male entrepreneurs.

Most entrepreneurs are degree holders (45%) followed by diploma holders (21%) and HSC (17%). Minority percentage was that of SC, less that SC and PhD representing 5%, 3% and 1% respectively. As mentioned by Storey (2004), expertise and academic achievement can be indicators of improved capital investment. The more human capital a company has, the more likely it is to develop, expand, and get access to enterprise opportunities.

The highest percentages of participants were from hospitality and food and beverage sector representing 32%. Next was the retail sector representing 24%. The manufacturing sector represented 20% of the sample studied. The lowest responses were from construction and IT sector representing 3 % each.

### ***Awareness about DM***

From table 1 below, it can be shown that out of 152 respondents more than three quarter of the populace consider DM to be useful representing a percentage of 89.5%. Moreover, 9.9% opted for ability to operate without DM representing only 15 respondents. This showed that Mauritian SMEs were already DM users and were willing to continue this trend.

Table 1

**How do you perceive digital marketing for your business?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Useful	136	89.5	89.5	89.5
Can operate without	15	9.9	9.9	99.3
Irrelevant	1	.7	.7	100.0
Total	152	100.0	100.0	

The findings showed that a majority of 136 participants out of 152 (89.5 %) SMEs have already recognized DM as being a helpful means to conduct entrepreneurial operation. Remaining 9.9% populace were not able to function without them or irrelevant (1%) to utilize such tools to promote the growth of their organisations. Furthermore, based on table 2 above, which asked respondents about their level of understanding of DM indicated that 129 respondents out of 152 defined DM as promotion through mixture of traditional and DM representing 84.9% whereas 11.8% responded by saying promotion only through SM and 3.3% through the enterprise’s website. This issue was vital to differ substantially between DM enterprises and those not using it to focus on its utilization among SMEs to achieve the research objectives. (See table 2)

Table 2

**What do you understand by Digital Marketing?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Promotion using only social media	18	11.8	11.8	11.8
Promotion over the company’s website	5	3.3	3.3	15.1
Promotion through SMS, social media, Website, and other digital mediums	129	84.9	84.9	100.0
Total	152	100.0	100.0	

It can be denoted that Facebook was the most used DM tool with 54 positive responses. Next was the enterprise’s website yielding a percentage of 15.8. Lastly, the third mostly used tool was social media representing 12.5% out of 152 responses. Facebook is the most common social media tools used by SMEs and in Cesaroni and Consoli (2015) study, it was reported that among the most common reason for this social media choice was because customers were more familiar with the online social media platform.

**Digital Marketing Use**

From the table 3, it was noted that a minority of respondents did not use digital marketing optimally (15.9%). The majority of respondents felt that they were using digital marketing to its optimal level (84.1%). As mentioned in the digital Mauritius report 2020, net penetration of digital marketing has been growing steadily in Mauritius over the past few years and the report tally well with the findings.

Table 3



**Do you think you use digital marketing optimally?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	23	15.1	15.9	15.9
	Yes	122	80.3	84.1	100.0
	Total	145	95.4	100.0	
Missing	System	7	4.6		
Total		152	100.0		

*Testing of hypotheses*

***Ease of Use and Digital Marketing use by SMEs***

Table 4 shows the results of hypotheses testing using Pearson’s Correlation. From the statistical result, it can be denoted that there is a negative correlation between ease of use and digital marketing usage since  $r = -2.85$  and  $p$  value was significant  $< 0.01$ . The finding was in support of Hypothesis 1, which stated that entrepreneurs who find it difficult to use digital marketing would be less likely to use digital marketing in their businesses.

Table 4

		Ease of use	Usage of digital marketing
Ease of use	Pearson Correlation	1	-.285**
	Sig. (2-tailed)		.000
	N	152	152
Usage of digital marketing	Pearson Correlation	-.285**	1
	Sig. (2-tailed)	.000	
	N	152	152

\*\* . Correlation is significant at the 0.01 level (2-tailed)

***Attitude and Knowledge and Digital Marketing Use by SMEs***

In the second hypothesis testing (see table 5), the result showed a positive correlation between attitude and knowledge of digital marketing and use of digital marketing ( $r = 0.452$  and  $p < 0.01$ ). Hence, hypothesis 2 which stated that entrepreneurs who have a positive attitude and knowledge towards digital marketing will more likely use digital marketing in their businesses is supported.

Table 5

		Attitude and knowledge	Usage of digital marketing
Attitude and knowledge	Pearson Correlation	1	.452**
	Sig. (2-tailed)		.000
	N	152	152
Usage of digital marketing	Pearson Correlation	.452**	1
	Sig. (2-tailed)	.000	
	N	152	152

\*\* . Correlation is significant at the 0.01 level (2-tailed)

### *Technical Availability and Digital Marketing Use by SMEs*

Based on table 6, the result showed a positive correlation between technical availability and use of digital marketing ( $r = 0.253$  and  $p < 0.01$ ). This denotes that technical availability of a business has an effect on the usage of digital marketing among Mauritian SMEs. Lankford (2000) and Dennis (2002) mentioned that business structural considerations, such as increased IT resource allocation and internal proficiency, have a substantial impact on technology implementation. Hence, hypothesis 3 which stated that entrepreneurs who have technical knowledge of digital marketing will be more likely to use digital marketing in their businesses is supported.

Table 6

		Technical availability	Usage of digital marketing
Technical availability	Pearson Correlation	1	.253**
	Sig. (2-tailed)		.000
	N	152	152
Usage of digital marketing	Pearson Correlation	.253**	1
	Sig. (2-tailed)	.000	
	N	152	152

\*\* . Correlation is significant at the 0.01 level (2-tailed)

### *Conclusion and Recommendation*

In this study it was found that 89.1% SMEs were familiar and using DM tools. This was further supported by 62% of the respondents agreeing upon DM being the easiest tool to use to create brand awareness and visibility. Regarding the small section of non-users of DM, these were companies who were either managed by retired persons or small shops with no aim of expansion. Moreover, the level of awareness of DM has been assessed which revealed that DM tools like Facebook and website were the commonly free used tools for marketing among SMEs in Mauritius. Entrepreneurs initiated that it simpler to interact and handle consumer reviews using DM tools as a result of customer centricity. Moreover, several drawbacks have been numbered

for DM. SMEs have pointed out that lack of time, finance, and resources as well as training are the main reasons for them not investing and applying DM at 100%.

Since the variable 'Ease of use' has a substantial impact on use of DM, entrepreneurs should equip themselves with the right skill training in order to take advantage of the benefits offered by the various digital marketing tools to help their marketing activities. This in turn could have a positive impact on their respective increase in their market share. Sometimes, SMEs lack both information and expertise to modify existing capabilities in order to respond effectively to emerging enterprise needs, hence acquiring those skills would be important for their success. Perhaps, to deal with the complexities of DM, SMEs may require a convenient and self-explanatory marketing instrument to help them utilize online tools more effectively.

Training for SMEs may be an option to promote the usage of DM and hence the worry about the service's simplicity of consumption will not remain an impediment to its usage. Furthermore, numerous suppliers are capable of giving assistance and outsource work for small and medium-sized enterprises. Hernandez, (2008) additionally argue that a person would discard even a smaller technological complexity if it cannot be seen to be beneficial. Therefore, it must be made clear that DM is beneficial or important to respective companies upon a preliminary phase previously it can be implemented in SMEs.

The mindset and expertise of entrepreneurs in Mauritius have an influence on the use of Digital marketing within SMEs. This outcome does not correspond to earlier investigations. This might be because DM infrastructure developments at SMEs are in an exponential phase of deployment compared to big enterprises. Furthermore, the degree of comprehension and DM techniques within SMEs is relatively low, due to a decrease level of technological awareness and expertise. This might prevent the entrepreneurs from adopting or rejecting the innovation.

Likewise, there was a substantial impact on the use of DM by the variable technical expertise of the SMEs. In a study by Koh and Maguire (2004), it was report that a company's capacity to do trade in a challenging situation depends upon its understanding, abilities, and practices. To counter such restrictions, which might prevent DM from being introduced, SMEs can outsource as best alternative in the absence of technological skills.

This study also indicated that if entrepreneurs uphold a positive attitude and knowledge about digital marketing, they would most likely use the digital tools for their businesses. Hence, it could be important for associations which support SMEs development to promote the use and benefits of using those tools. This would help to create greater awareness on their benefits and could change entrepreneurs with negative attitude towards the digital marketing tools.

This report's results cannot be generalized due to the limited random sample of 152 SMEs. It was attributable to the fact that the report's focus remained limited to Mauritius instead of the overall industry. As a result, extreme caution should be taken while extending these findings to the larger population. When measuring the degree of digital marketing utilization, the research did not consider underlying driving reasons. Such stimulating elements may have a significant positive impact on technological utilization that they may even outweigh overall detrimental effect of the restricting aspects.

Technology and digital marketing strategies are always changing. As early-stage startups and entrepreneurs are looking to get the pre-product market fit right, they should not consider product development to be more important than branding and digital marketing. Everything that a customer experience is the product. This is something that both startups and media companies don't always fully understand. Things like creating content, blogging, and building brand awareness around a product are often considered a secondary experience and a secondary part of the company, which is a completely wrong way of thinking. In many instances, what a customer first experiences about your product are on the internet or in the media long before they even get a chance to touch or use it first-hand. If your company does not have both of these aspects working together in alignment, then you could be causing yourself problems with building awareness for your company and product.

This study however contains many limitations in terms of sampling design and strategies. Future studies could focus on same sectors but with larger sample sizes to get an in-depth understanding on the issues discussed in this study. Hence, this study cannot be generalized into the SMEs population in Mauritius. Furthermore, other variables could most likely interplay with the independent variables found in this study, and may require more attention in future studies on SMEs use of digital marketing.

Additional research might incorporate moderating factors to reduce measurement errors. Deeper analysis must also consider all of the driving aspects of digital marketing such that statistics may be further integrative and complete. Furthermore, continued studies will improve the conceptual framework for integrating additional important independent factors and dependent variables. Moreover, the conclusions of this study do not apply to a particular area of the SME business. Additional variables impacting the use of SMEs in the Mauritian SMEs sector in such a given area might be considered as a means of additional investigation.

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# Examining the Prevalence and Impact of Miscarriages of Justice on the Criminal Justice System: A Critical Assessment

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## Abstract:

This paper critically examines the phenomenon of miscarriage of justice in the criminal justice system. Despite the standard of 'beyond reasonable doubt' in criminal law, innocent individuals can still be wrongly convicted, as exemplified in the House of Lords' ruling in the case of Director of Public Prosecutions v. Shannon. The history of successful appeals against criminal conviction worldwide shows that 'probabilities' are not certainties and there are various ways in which wrongful convictions can occur. This paper explores the circumstances and causes of past miscarriages of justice, and proposes measures to reduce the risk of such occurrences in Mauritius.

**Keywords:** Miscarriage of Justice, wrongful convictions, Tunnel vision, Criminal Justice System, Human Rights.

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## Introduction

According to the Criminal Justice system in Mauritius, a fair trial is a fundamental principle that is also protected by the Constitution and Criminal law. Anglo-based criminal justice systems like the one in Mauritius have several safeguards to prevent wrongful convictions, such as the presumption of innocence, the prosecution's burden of proof beyond reasonable doubt, the right to counsel and to present evidence, trial by jury for charges of murder or manslaughter, rules of evidence to exclude irrelevant, unfair, or prejudicial information, and rights conferred to a suspect during the police enquiry stage. Despite these measures, courts are not infallible, and sometimes, innocent individuals may be wrongly convicted. If found guilty, a person may appeal to a court of appeal and ultimately to the Judicial Committee of the Privy Council (J.C.P.C.).

## Wrongful Conviction or Miscarriage of Justice?

The term "miscarriage of justice" refers to the irony of injustice caused by a justice system that is meant to dispense justice. Some authors argue that it results in a double injustice: the first being towards the victim or the victim's family since the actual perpetrator has not been held accountable for their crime, and the second being towards the innocent individual who has been wrongfully convicted. Although the term "miscarriage of justice" is frequently used, there are few legal decisions that have clarified its meaning. The term "miscarriage" refers to a failure to achieve a desired outcome or goal, and a miscarriage of justice is the failure to attain the desired end result of justice. In a 2011 judgment, the Supreme Court of England formulated a test to determine whether a miscarriage of justice has occurred.

The definition of a miscarriage of justice was established by the Supreme Court of England in 2011 as "when a new or newly discovered fact shows conclusively that the evidence against a defendant has been so undermined that no conviction could possibly be based upon it." (Maguire & Sandford, 2012). According to Naughton (2007), a conviction is considered unsafe and a miscarriage of justice has occurred when the grounds on which it was attained give serious cause for concern about its safety. The term "miscarriage of justice" encompasses both wrongful convictions and cases where a defendant is found guilty on grounds that are later deemed unsafe, which can occur in the same case (Naughton, 2007).

## Errare Humanum est

With the absence of any mechanism to recognise and deal with wrongful convictions in Mauritius, one might assume that the country is immune from any form of miscarriage of justice. However, unlike other countries such as Canada, India, Singapore, Australia, United States of America or New Zealand, Mauritius has not faced public scrutiny for such cases. Nevertheless, it is acknowledged that despite the safeguards in place, the judicial system sometimes fails, and this has led to the exoneration of thousands of wrongfully



convicted persons in other countries. The advent of DNA testing technology has played a significant role in preventing wrongful convictions that could lead to imprisonment, life imprisonment, or death penalties. All stakeholders within the criminal justice system in Mauritius should consistently strive to reduce the risk of miscarriages of justice to a minimum, and acknowledging the problem is the first step towards achieving that aim. The former Prime Minister Blair's apology letter to the wrongfully convicted Guildford Four and acknowledgment of the miscarriage of justice was a giant step towards addressing wrongful convictions. In reference to the wrongful convictions of the Guildford Four, the former Prime Minister expressed his regret, stating that "I believe that it is an indictment of our system of justice and a matter for the greatest regret when anyone suffers punishment as a result of a miscarriage of justice. There were miscarriages of justice in your husband's case, and the cases of those convicted with him. I am very sorry indeed that this should have happened." (Blair, 1991, as cited in Naughton, 2007).

According to research, the United States has set up a national registry of exonerated persons, revealing that over 2,000 people were convicted and incarcerated for crimes they did not commit. These individuals had to endure years of imprisonment before being declared innocent. Similarly, in the United Kingdom, high-profile cases such as the Birmingham Six, the Guildford Four, and the Maguire Seven have been overturned and labelled as "unsafe and unsatisfactory" after the falsely accused individuals had spent more than a decade in prison. These miscarriages of justice have brought into question the integrity of the justice system in both countries as it represents a failure on multiple levels: (1) the wrongful conviction and imprisonment of an innocent person; (2) the true perpetrator(s) evading punishment and potentially committing more crimes; and (3) the re-victimisation of the victim's family who had a sense of closure with the conviction and now must cope with a reopened emotional wound.

In various countries such as Canada, the United Kingdom, and the United States, there has been a growing recognition of the need to address the issue of wrongful convictions and miscarriages of justice. One positive outcome of this recognition has been the establishment of commissions to investigate the causes of wrongful convictions and to develop strategies to prevent them from happening in the future. For instance, the Canadian Supreme Court has acknowledged the need to consider the risk of wrongful convictions and miscarriages of justice in its judgments on the admissibility of evidence. The commissions established in the above-mentioned countries have identified a range of factors that contribute to miscarriages of justice, with "tunnel vision" at the inquiry stage being a leading cause. These commissions have also made recommendations on how to prevent wrongful convictions and miscarriages of justice from occurring in the future.

### **Research Questions and Limitations**

The following research questions have been examined to provide guidance and direction for the research conducted:

1. What are the root causes of miscarriages of justice?
2. How has this issue been addressed and combated?
3. What are the consequences of a failing criminal justice system?
4. What suggestions have been made for improvements?
5. What is the current state in Mauritius and what modifications are necessary for the current legal framework?

Analysing the efficiency of provisions related to miscarriage of justice in the local context has been challenging due to certain limitations. One major limitation is the absence of local cases that have been decided following the amendment of the Criminal Appeal (Amendment) Act. This makes it difficult to assess the effectiveness of the provisions. Additionally, the high threshold imposed by the law, specifically the "fresh and compelling evidence" test, limits the number of cases that are admissible, further complicating the situation.

### **Miscarriages of justice: A global phenomenon**

Various commissions of enquiries, inquests and governments around the world have acknowledged the fact that Courts of Law have, on many occasions, wrongfully convicted (and sometimes executed) innocent people (Anderson & Anderson, 2011; Gross, Jacoby, Matheson, Montgomery, & Patil, 2005). There are countless other prisoners throughout the world who are serving sentences for crimes they did not commit (The Innocence Project, n.d.). Wrongful convictions as well as inquiries into their causes tend to expose the

various flaws of our criminal justice system: the amateurism level of police enquiries, police or prosecutorial misconduct and poor forensic practices are a few of these flaws (Innocence Commission, 2016; Tanovich, 2015). There have been a number of cases and commissions of enquiries which have brought the spotlight on the flaws of our justice system and the object of this part is to present a bird's eye view of the situation in different jurisdictions and also present the organisations and other institutions which have been set up to prevent and enquire into miscarriages of justice (Commission on Capital Cases, 2020; Innocence Project, n.d.). This will set the basis for the next part which aims to discuss the changes that may be brought to the Mauritian Criminal Justice System to fight wrongful convictions and miscarriages of justice.

### **The situation in England & Wales**

In 1974, Judith Ward was convicted of murder of several people caused by a number of IRA bombings in 1973 (BBC News, 2003). Judith Ward spent 18 years in jail before her conviction was quashed in 1992 (The Guardian, 1992). Her lawyers argued the trial jury should have been told of her history of mental illness (BBC News, 2003). The Court of Appeal concluded that Ward's conviction had been "secured by ambush". They said government forensic scientists had withheld information that could have changed the course of Ms Ward's trial (The Independent, 1993). She was eventually set free in 1992 after having been wrongfully detained for more than eighteen years (The Guardian, 1992).

The 'Birmingham Six' refers to six men who were jailed for life in August 1975, after 21 people were killed by bombs in two Birmingham pubs (The Independent, 1991). In 1991, their appeal was allowed in the light of new evidence of police fabrication and suppression of evidence which successfully dismantled both the confessions and the 1975 forensic evidence (BBC News, 2015). Their conviction was quashed on appeal (The Independent, 1991). In 2001, a decade after their release, the six men were awarded compensation ranging from £840,000 to £1.2 million (The Guardian, 2001).

The 'Guildford Four' were convicted of bombings carried out by the IRA, and the 'Maguire Seven' were convicted of handling explosives found during the investigation into the bombings (The Independent, 1991). Both groups' convictions were eventually declared "incorrect and unsatisfactory" and reversed in 1989 and 1991 respectively after they had served 15-16 years in prison (BBC News, 2015). However, they were not compensated for these years in prison (The Guardian, 2005).

### **The Criminal Cases Review Commission and Innocence Network UK**

The Criminal Appeal Act 1995 established the Criminal Cases Review Commission (CCRC) following the recommendation of the Runciman Commission report (Home Office, 1993). The CCRC has the authority to assess and investigate applications for review made by individuals who claim that they have been wrongfully convicted (Criminal Appeal Act 1995). If the Commission is convinced that there is a "real possibility" that the conviction might be overturned by referring the matter back to the court, and that the grounds for review are primarily based on fresh evidence, then the Commission may refer the case to the Court of Criminal Appeal (Criminal Appeal Act 1995).

The Scottish Criminal Cases Review Commission, which was established in 1999, has referred 107 cases to the courts for review, and 58 of these cases have resulted in the quashing of convictions or the reduction of sentences between 1999 and the present (Scottish Criminal Cases Review Commission, 2023).

To help the factually innocent victims of wrongful convictions, the Innocence Network UK (INUK) was established to help them unearth the truth in their cases, provide legal assistance, and present arguments before the CCRC (INUK, 2023). INUK also organises workshops on all aspects of understanding wrongful convictions to reduce their occurrence (INUK, 2023).

### **The Canadian Justice System on Trial**

The case of Truscott put the Canadian justice system on trial. In 1959, Steven Murray Truscott, was sentenced to death for the murder of 12-year-old Lynne Harper. He was only 14 at the time and his death sentence was commuted to life imprisonment (Lyon, 2008). Truscott was scheduled to be hanged on December 8, 1959 but a temporary reprieve on November 20, 1959 postponed his execution to February 16, 1960 to allow for an appeal (Lyon, 2008). On January 22, 1960, his death sentence was commuted to life imprisonment (Lyon, 2008).

In 2001, Truscott sought a review of his 1959 murder conviction. Hearings were heard at the Ontario Court of Appeal. In 2007, after review of new expert pathology and gastroenterology evidence, as well as archival documents that relate to the credibility and reliability of the evidence of the doctor who performed the autopsy on the body of Lynne Harper the court concluded that this material, which was not considered at trial, qualifies as fresh evidence which significantly undermines the medical evidence relied on by the prosecution in the prior proceedings (R v Truscott, 2007). The court declared that Truscott's conviction had been a miscarriage of justice and the court acquitted Truscott of the murder (R v Truscott, 2007).

On July 7, 2008, the government of Ontario awarded him \$6.5 million in compensation (Globe and Mail, 2008).

### The Criminal Convictions Review Group

The Department of Justice in Canada published a consultation paper on the topic of wrongful convictions in 1998, leading to amendments to the Criminal Code that created a mechanism for wrongfully convicted individuals to seek a review of their case based on sufficient grounds. This review may lead to a new trial or referral to the Court of Appeal, as decided by the Minister of Justice under the Canada Inquiries Act (Department of Justice Canada, 2018).

### The Impact of the Advance in DNA Technology in the United States of America

According to the Innocence Project, there have been 325 post-conviction DNA exonerations in the United States alone. Despite the growing prevalence of these cases, there is no evidence that the justice system is correcting itself (Innocence Project, n.d.).

In 1994, Damien Echols, Jessie Misskelley Jr., and Jason Baldwin were convicted of the murder of three young boys. Their convictions were based on poor police work, unreliable forensic evidence, coerced confessions, jury misconduct, and fabricated evidence (PBS, 2011). However, in 2011, after 17 years in prison, new DNA evidence was discovered that proved their innocence (Eggers, 2011). Top pathologists found that much of the forensic evidence presented at trial was false and inconsistent with the cause of death and wounds on the victims' bodies (PBS, 2011). Although the three men pleaded guilty in exchange for their release, they maintained their innocence (Eggers, 2011).

Darryl Hunt was another victim of a wrongful conviction. Despite there being no evidence connecting him to the murder of Ms. Sykes, an all-white jury found him guilty and he was sentenced to life in prison (Kurtzleben, 2016). However, ten years later, crucial DNA evidence that was not available at the time of trial demonstrated that he was innocent (The Innocence Project, 2019). Willard Brown later confessed to the murder after DNA evidence linked him to the crime (Kurtzleben, 2016). After serving 19 years for a crime he did not commit, Hunt was finally released (The Innocence Project, 2019).

The table below presents the factors that have contributed to the first 325 wrongful convictions that were overturned through DNA evidence.

#### Contributing Causes of Wrongful Convictions (first 325 DNA exonerations)

Total is more than 100% because wrongful convictions can have more than one cause.

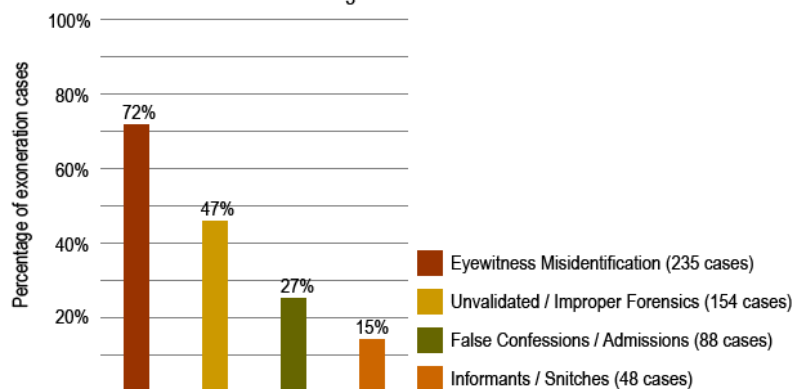


Figure 1: Contributing causes

### **The Innocence Project**

In the United States, the Innocence Project (IP) was established as a non-profit legal clinic with the goal of using DNA testing to exonerate wrongfully convicted individuals and to bring about reforms in the criminal justice system to prevent future injustices (Innocence Project, n.d.). The use of DNA technology to free innocent people has been ground-breaking and has provided undeniable proof that wrongful convictions of the factually innocent are not isolated or rare events but are instead the result of systemic flaws within the system (Innocence Project, n.d.). The Innocence Project's mission is to free the large numbers of innocent people who remain incarcerated and to bring about meaningful reform to the system responsible for their unjust imprisonment (Innocence Project, n.d.).

It is important to note that there is a distinction between the situation in England and Wales, where a conviction may be quashed on the grounds that it is unsatisfactory following a referral from the Criminal Cases Review Commission (CCRC). In this context, a person may be successful in having their conviction quashed by establishing their legal innocence, rather than their actual innocence. Conversely, in the United States, the innocence projects seek to establish factual innocence through DNA exonerations (Griffin, 2013). As noted by Lissa Griffin, "the United Kingdom defines the problem as 'righting miscarriages of justice,' and the United States defines it as 'correcting factually erroneous convictions'" (Griffin, 2013, p. 87).

### **Australia and New Zealand**

In Australia, Richard Doney was wrongly convicted for the offence of importation of cannabis resin in 1984, with the Prosecution's case heavily relying on the testimony of an alleged accomplice and an expert witness confirming Doney's handwriting. He was sentenced to 20 years in prison. However, subsequent court proceedings found the accomplice's testimony to be unreliable and an eyewitness gave evidence contrary to the expert witness. After two trials and three appeals, Doney was released on parole in 1995 after serving over six and a half years in jail. In 2001, the Court of Appeal found that fresh evidence had established the conviction was unsafe and that there had been a wrongful conviction, resulting in Doney's acquittal. The Innocence Project, which is aimed at helping factually innocent convicts prove their innocence, also exists in Australia and is run by Griffith University.

### **New Zealand**

In 1995, David Cullen Bain was convicted of the murders of his parents and sibling and was sentenced to life imprisonment. However, following new evidence, Bain was successful in his appeal to the Privy Council in 2007, resulting in his conviction being quashed and a retrial being ordered. In June 2009, Bain was acquitted on all five charges after a five-hour, fifty-minute deliberation. The case has become one of the most well-known examples of a wrongful conviction being overturned due to DNA evidence. (BBC News, 2009)

### **Leading Causes of Miscarriages of Justice**

The fact that the criminal justice system in the United States is flawed is widely acknowledged (Pew Research Center, 2021). However, the question of what causes this system to go off track remains unanswered. While the Magistrate or Judge may be perceived as the primary parties responsible for such failures, there are several intervening factors that contribute to the system's shortcomings, both before and during trial (Finnane, 2002). Such factors include but are not limited to, the haste in completing investigations, errors at the trial level, witnesses who intentionally perjure themselves to serve their own interests, errors from the bench, police's deliberate manipulation of evidence, or any combination of these factors (Shelton, 2005).

In analysing these factors, it is useful to classify them into two groups: factors that may be attributed to individuals and factors that are imputable to the system as a whole (Finnane, 2002). By understanding the root causes of these factors, the criminal justice system can be reformed and made more effective.

### **Factors which may be Imputed to the System**

The pressure exerted by society to find and punish those responsible for heinous crimes often has a significant impact on the integrity and conduct of investigations (Petherick & Turvey, 2013). The police force is responsible for meeting society's demands for justice, and the burden of this responsibility falls on the investigating officers (Zimmerman, 2019). Failure to bring accused persons to trial may result in the police force being viewed as inefficient, and this pressure can be difficult to overcome. However, providing training to investigating officers and police officers in general can equip them to work effectively under extreme pressure and deliver the best possible outcome (Wolfe, 2004).

The media is another significant factor that contributes to miscarriages of justice and can be attributed to the broader criminal justice system (Wolfe, 2004). Reports on crimes and investigations can have a direct impact on the jury members' perceptions of the case. Such reports can influence the public and create a presumption of guilt before a trial has even begun (Greer & McLaughlin, 2010). It is common for previous convictions of accused parties to be disclosed to the public before the trial has taken place, creating a prejudice against the accused party that is difficult to overcome (Muncie & McLaughlin, 2001).

To avoid these issues, it is crucial to adhere to the golden rule of presumption of innocence and to ensure that the media refrains from conducting a trial by the press (Greer & McLaughlin, 2010). Furthermore, legal systems can be reformed to allow for greater impartiality and reduced public influence on trials, including measures such as sequestering juries (Muncie & McLaughlin, 2001).

### **Factors which may be Attributed to Persons**

A confession is often considered a powerful piece of evidence in proving a person's guilt during a trial. However, false confessions can also occur due to a variety of factors. For instance, being deprived of personal liberty and being detained can prompt individuals to admit to crimes they did not commit in order to regain their freedom. Obtaining a confession may also make an enquiring officer's job easier, which can be tempting. Unfortunately, in some cases, enquiring officers resort to illegal means, such as police brutality, to obtain a confession. In Mauritius, there have been allegations of police brutality in cases such as the deaths of Michaella Harte and Iqbal Toofany. False testimonies can also be a factor in miscarriages of justice. Witnesses may provide false testimonies for various reasons, including personal gain or retribution, which can influence the sitting Judge or Magistrate. Additionally, witnesses can make honest mistakes or misidentifications, leading to wrongful convictions (Harel Mallac, 2015; Innocence Project, n.d.; Kassir, 2016).

### **Tunnel Vision**

One particular cause of miscarriages of justice which shall be discussed in greater detail is 'tunnel vision'. Tunnel vision, which has been identified as a major cause of wrongful convictions worldwide, occurs when one particular case theory is over focused upon, causing the whole investigation to be drawn in one particular direction with two major consequences: the ignorance of potentially crucial pieces of information and evidence on the ground that it does not fit in with the case theory and the unreasonable evaluation interpretation and sometimes manipulation of information and evidence to make it fit with the case theory. (Gudjonsson, 2003)

The following is a passage from the judgment of *Boucher v. The Queen*, where Rand J said: 'It cannot be over-emphasized that the purpose of a criminal prosecution is not to obtain a conviction, it is to lay before a jury what the Crown considers to be credible evidence relevant to what is alleged to be a crime. Counsel have a duty to see that all available legal proof of the facts is represented; it should be done firmly and pressed to its legitimate strength but it must also be done fairly. The role of the prosecutor excludes any notion of winning or losing; his function is a matter of public duty than which in civil life there can be none charged with greater personal responsibility. It is to be efficiently performed with an ingrained sense of the dignity, the seriousness and the justness of judicial proceedings.' (*Boucher v. The Queen*, 1954)

Therefore, within the context of tunnel vision, Prosecutors and State Counsel ought to try to regularly assess the police investigation and the evidence against a suspect in way that is fair and just. In a report on the prevention of miscarriages of justice which is published on the website of the Department of Justice of Canada, the following factors were identified as potential contributors to State tunnel vision, that is, impairing the proper role of the State Counsel: a. Close identification with police and/or victim; b. Pressure

by the media and/or special interest groups; and c. Isolation from other perspectives. (Department of Justice Canada, 2011)

### **The Commissions of Enquiry**

There have been three Commissions of Inquiry into wrongful convictions in Canada, and all three have emphasized the dangers of tunnel vision and provided recommendations for preventing it (Mullins, 2005). The Royal Commission into the Donald Marshall trial was the first of these commissions, and it stressed the need for a separation between police and prosecuting functions (Mullins, 2005; Royal Commission on the Donald Marshall, Jr., Prosecution, 1989). The Sophonow Inquiry, which followed the Royal Commission, recommended regular, mandatory training for police officers on tunnel vision (Mullins, 2005; Manitoba. Public Inquiry into the Administration of Justice and Aboriginal People, 1991). The Kaufman Report extended this recommendation to include Crown Attorneys (Mullins, 2005; Ontario. Report of the Inquiry into the Re-Trial of James Driskell, 2008).

MacFarlane (2009) analysed two features that are typical of cases of wrongful convictions: environmental factors or "predisposing circumstances" that foster wrongful convictions in the first place, and "tunnel vision" (p. 381). He described "noble cause corruption" as an ends-based police and prosecutorial culture that justifies misconduct as legitimate because it is in pursuit of justice (MacFarlane, 2009). Tunnel vision, on the other hand, causes justice system participants to focus prematurely on a single suspect, eliminating other potential suspects and ignoring evidence that does not support their theory (MacFarlane, 2009; Manitoba. Public Inquiry into the Administration of Justice and Aboriginal People, 1991). MacFarlane recommended that police officers, counsel, and judges receive mandatory annual training on tunnel vision and its effects (MacFarlane, 2009; Manitoba. Public Inquiry into the Administration of Justice and Aboriginal People, 1991).

In a paper titled "Wrongful Convictions: The Effect of Tunnel Vision and Predisposing Circumstances in the Criminal Justice System," Bruce A. MacFarlane QC discussed two common features in cases of wrongful convictions. He stated that despite the diverse legal, political, and social environments of these jurisdictions, "the similarity in causal patterns and trends is at the same time both chilling and disconcerting" (MacFarlane, 2003, p. 3). Firstly, he analysed the existence of environmental factors or "predisposing circumstances" that facilitate wrongful convictions, including "noble cause corruption," an ends-based police and prosecutorial culture that legitimizes misconduct under the guise of bringing the guilty to justice. Secondly, he examined "tunnel vision," which leads justice system participants to prematurely focus on a single suspect (MacFarlane, 2003).

MacFarlane's paper also highlighted the Kaufman Report, which extended the above recommendations to include Crown Attorneys (MacFarlane, 2003). He argued that criminal investigations and trials take place in the context of the social, political, and economic conditions of the time, and despite the objective pursuit of the truth, "many subjective factors influence the course of events" (MacFarlane, 2003, p. 2). Justice may be blind in theory, but in reality, the various players making up the justice system bring their own perspectives, experiences, biases, aspirations, and fears to the decisions they make (MacFarlane, 2003).

According to a report by the Law Reform Commission of Mauritius, the issue of tunnel vision is a concern in the country's justice system. The report noted that, "There are currently no established mechanisms to help reduce the occurrence of tunnel vision in Mauritius," and that unless stakeholders, including defense counsel, are warned and guided, there is a risk of wrongful convictions. The report emphasized the importance of addressing this issue, stating that "innocents will unfortunately be jailed while the real culprits [remain] on the loose because of that particular cause" (Law Reform Commission of Mauritius, 2014, p. 6).

### **The Local Context**

#### **Finality of the Law v/s the Interests of Justice**

The principle of the presumption of innocence is a fundamental right that individuals enjoy until they are convicted. Once a conviction is obtained, the person is generally presumed guilty, and if they happen to be innocent, proving their innocence can be a long and arduous journey filled with obstacles. At the appeal stage, the appellant carries a heavy burden of establishing that their conviction was unsafe. However, the courts are reluctant to interfere with the interpretation of facts by the trial courts, who have the benefit of

firsthand observation of witnesses when they testified. Once conventional legal avenues have been exhausted, and the person finds themselves in prison with limited or no resources to fight for their innocence, establishing innocence becomes even more challenging.

While the finality of the law is critical to maintaining due process, it also means that once the last court of appeal has rejected an appeal, it becomes exceedingly difficult for a wrongfully convicted person to establish their innocence. However, in countries such as the United Kingdom, the United States, and Canada, institutions have been set up to address wrongful convictions due to the recognition that the criminal justice system is not infallible.

In Mauritius, until 2013, a person who had been found guilty by the trial court and failed in their appeal had no further legal avenues to challenge their conviction, even if compelling fresh evidence demonstrated their innocence. The finality of the law was applied without exception. The appeal to the Supreme Court in its appellate capacity or the Court of Criminal Appeal dealt only with the safety of the conviction, and no precedent exists in Mauritius where someone was exonerated following fresh evidence demonstrating their innocence, a concerning issue (Law Reform Commission of Mauritius, 2014).

There is a consensus that, similar to criminal justice systems worldwide, our justice system has made errors. The issue at hand is that we have chosen to ignore the problem. This method of avoiding the aftermath of our criminal justice system was inevitably going to conflict with society's expectation of honesty and impartiality. In this context, it is relevant to cite the renowned novelist and journalist Emile Zola who famously said: "If you shut up truth and bury it underground, it will but grow and gather to itself such explosive power that the day it bursts through it will blow up everything in its way" (Zola, 1898).

Thankfully, the situation in Mauritius did not reach such an extreme level. However, after the release of the report "Wrongfully Convicted," which aimed to prove that four individuals were wrongly convicted of a crime, there was a notable sense of frustration among certain sections of the population. It was during this time that modifications were made to the Criminal Appeal Act (Laws of Mauritius, 2019) to address the issue.

### **The 2013 Amendments**

The report "Wrongfully Convicted" is a comprehensive analysis of the "Amicale" case, a 1999 arson that resulted in death, in Mauritius (Luchmun, 2016). Following the report's publication, a crucial question emerged: Can a conviction be overturned if new evidence is discovered? At the time, the answer was a resounding "no." Once an appeal had failed, there was no further recourse to challenge a conviction. In the "Amicale" case, the convicts sought relief by making an application to the Commission for the Prerogative of Mercy (CPM), as it was the most feasible option available. Such applications are governed by Section 75 of the constitution (Constitution of Mauritius, 1968).

The avenue of the Commission for the Prerogative of Mercy (CPM) is intended for cases where an individual is seeking clemency for reasons that may have arisen subsequent to their conviction. It is not equipped to address cases of purported wrongful convictions since it lacks the authority and resources to investigate claims of factual innocence (Kisten, 2020).

It was in that context that an amendment was brought to the Criminal Appeal Act: The amendment (The Criminal Appeal (Amendment) Act 2013) provides that:

- ❖ *Subject to certain conditions, the Director of Public Prosecutions may apply for a review of the proceedings following acquittals in certain cases;*
- ❖ *A person, after having been found guilty following a trial before the Supreme Court may equally make an application for a review of the proceedings and if successful the Court may then quash the conviction or order a retrial, as it thinks fit and proper in the circumstances. For the Court to make such an order, it must be satisfied that there is 'fresh evidence and compelling evidence' in relation to the offence.*

The legal definition of "fresh evidence" is evidence that was not presented during the original trial and could not have been presented with reasonable effort at the time. "Compelling evidence" is defined as evidence that is reliable, substantial, and highly probative with respect to the issues in question during the trial (R. v. Palmer, 2010).

## **The Inadequacy of the Current Provisions**

The passing of the amendment created mixed feelings, some arguing that it was finally a step in the right direction but others pointing out to the extremely high threshold when it came to sifting admissible evidence. The test case was again the 'Amicale case'. An application under Section 4A of the Protection of Human Rights Act was made to the Human Rights Division of the National Human Rights Commission. The enquiry lasted over fifteen months and over forty witnesses came forward, some of whom had never deposed previously (Human Rights Division, 2015). The findings were published on 24th June 2015 and the Division was not satisfied that there existed fresh and compelling evidence in that case and therefore it did not refer the conviction to the Supreme Court for a review.

However, having come to the above-mentioned conclusion, the Division devoted an entire section to making certain general remarks about its mandate. It drew up a comparison between the CCRC and the situation prevailing in Mauritius. Quoting Michael Naughton, it stated 'In its review, the CCRC seeks to find fresh evidence that undermines the reliability of the evidence that led to the conviction, as opposed to the evidence of innocence or, even guilt.' (Human Rights Division, 2015, p. 22) It then proceeds by explaining that in Mauritius, the Division is faced with the same difficulty since it cannot explore the matters which have already been before the jury or which were canvassed on appeal or by way of motion following the conviction. In a gist, the limited mandate of the Division is highlighted.

Furthermore, having identified certain disquieting features in the case, the Division states that "these disquieting features could have become the ground for a reference had the amendment to the Criminal Appeal Act included "exceptional circumstances to lead to a reference". However, although the Criminal Appeal (Amendment) Act was drafted along the same lines as the legislation in England and Wales, the Mauritian legislation does not follow its English counterpart which also allows a reference in exceptional circumstances" (Human Rights Division, 2015, p. 23).

The Human Rights Division of the National Human Rights Commission in Mauritius has acknowledged that the 'Amicale case' contains disquieting features that may warrant a review by the Supreme Court, but the current law prevents such a review. Additionally, the threshold for fresh and compelling evidence is so high that it makes it highly unlikely for a person to successfully prove their innocence under the existing legislation. Therefore, the next section will explore potential changes that could be made to the current system.

## **Improvements that may be made to our System**

We will address the improvements that may be brought to our system under two broad headings: (1) Legislative improvements and (2) Non-legislative improvements.

As stated in the preceding section, the current legislation in respect of miscarriages of justice and wrongful conviction is incomplete and in dire need of a few amendments. The most pressing of these amendments would be to loosen the stringent rules so that reviewing a conviction is practical rather than purely theoretical. One must not lose sight of the fact that the wrongfully convicted are often abandoned by relatives and close ones and also devoid of any means so that they cannot secure proper legal assistance (Rishy-Maharaj, 2016). Any amendments would need to ensure that not only the legal threshold for admitting new evidence is reviewed but also that the whole process of seeking a review is accessible for the lay person. In that respect, the legal aid act could be amended so that once a person qualifies for legal aid, that person can then obtain free legal assistance for the review proceedings (Rishy-Maharaj, 2016).

Yet another improvement that can be made lies in the passing of a Police and Criminal Evidence act (PACE) which will in effect impose certain conditions on police officers to work in a more disciplined and fair manner (Murphy, 2016). Finally, another improvement which could be made and which recently caught the headlines is the abolition of the 'provisional charge' system. There are countless persons who are arrested, detained and deprived of their liberty for days or weeks pending a bail hearing simply on the basis of an allegation. Often, these charges are dismissed at trial level but the mere fact that a person has, on the basis of a mere allegation, spent a few days in police cell is in itself a miscarriage of justice (Rishy-Maharaj, 2016).

Aside from the legislative front, there are a number of steps that may be taken in order to be pro-active in the treatment of the plague that is miscarriages of justice. First of all, there should be a commitment at State



level to combat the problem. This is of capital importance since a consequent investment is needed from the state to revamp our entire criminal justice system. This includes investing in the police departments so that out enquiring officers have the necessary tools and equipment to lead a proper enquiry. That also includes investment in the training of the said enquiring officers and police prosecutors alike (Rishy-Maharaj, 2016).

One very disturbing feature which is well embedded in our criminal justice system and which may well be one of the causes of miscarriages of justice in Mauritius is the fact that a vast majority of our magistrates are appointed in their post after a spell at the Office of the Director of Public Prosecutions (DPP). Without in any way whatsoever casting doubt on their integrity, there is an inherent risk that they are subconsciously viewing cases and interpreting facts like they have been used to in their previous role as prosecuting counsel. It is in that respect that a proposition can be made so that our magistrates follow a specific magistrate course before being appointed in their role (Varma, 2006).

### **Concluding Remarks**

The concept of miscarriage of justice has been a topic of concern for many legal scholars and practitioners. According to Choo and Nash, miscarriages of justice occur when an innocent person is convicted or when a guilty person is acquitted due to errors or mistakes in the legal system (Choo & Nash, 2015). These errors can be caused by a variety of factors such as false confessions, unreliable witnesses, faulty forensic evidence, and biased investigations.

The impact of miscarriages of justice can be devastating, as innocent people may be deprived of their freedom, separated from their families and loved ones, and may suffer long-term psychological trauma. The compensation scheme for wrongful convictions is one way to address the harm caused by miscarriages of justice, but it is not enough. It is important to identify and address the root causes of miscarriages of justice to prevent them from happening in the first place.

In order to prevent miscarriages of justice, the legal system should strive to ensure fairness and impartiality in all stages of the criminal justice process. This can be achieved by implementing proper procedures for evidence collection, witness testimony, and jury selection. Additionally, legal practitioners and law enforcement officials must receive adequate training on how to avoid biases and errors in their work (Denov, 2019).

Miscarriages of justice are a real and ongoing problem in the criminal justice system. It is crucial to address the root causes of these miscarriages in order to prevent innocent people from being wrongfully convicted and to ensure that the guilty are brought to justice. By doing so, we can help to maintain the integrity and fairness of the legal system.

According to Kaur and Bal (2018), the cases of miscarriages of justice that have been examined represent only a small fraction of the actual number of such cases. This is due to an initial reluctance to accept such cases, motivated by the need to maintain public confidence in the justice system. However, several countries have established commissions and made legal amendments in an attempt to address the issue. The responsibility to prevent miscarriages of justice lies with all stakeholders in the criminal justice system, and requires regular self-assessment and critical examination of decisions at every stage of the process. Factors contributing to miscarriages of justice can be attributed to individuals or the system itself, and efforts should be made to reduce these factors. The Law Reform Commission, an independent statutory body responsible for proposing reforms and changes to the law, should also consider legislative changes to address the issue (Kaur & Bal, 2018).

The need for professionalism and adequate training among stakeholders is crucial in addressing miscarriages of justice, which are often the result of bad or incomplete decision-making based on insufficient information (Kaur & Bal, 2018). Enquiring officers must be trained to process information and base decisions on concrete evidence rather than hunches, and should maintain an open mind and discuss findings with superiors (Kaur & Bal, 2018). In emotionally charged cases, it may be necessary for an unconnected enquiring officer to lead the investigation to ensure fairness, balance, independence, and transparency (Kaur & Bal, 2018).

The English Criminal Cases Review Commission (CCRC) model provides valuable lessons for domestic changes, although concerns have been raised about its failure to distinguish between wrongful conviction of an innocent person and broader miscarriages of justice (Kaur & Bal, 2018). Any legislative changes should

therefore be limited to remedies for those claiming factual innocence, not those claiming a miscarriage of justice solely on a point of law (Kaur & Bal, 2018). It is important to remember that a conviction of a factually guilty person being overturned is also an injustice (Kaur & Bal, 2018).

Finally, the Supreme Court should play a more proactive role in addressing miscarriages of justice by acknowledging them and sanctioning appropriate action (Kaur & Bal, 2018).

According to Kaur and Bal (2018), the risk of miscarriages of justice in the criminal justice system is a continuous challenge due to the likelihood of human error. However, by involving all stakeholders in the criminal justice system, a system can be developed to minimize the risk of miscarriages of justice. This system should also provide appropriate remedies for victims of such miscarriages. In light of the progress made in other jurisdictions, it is hoped that Mauritius will quickly adopt similar measures to address this issue.

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# The Value Relevance of Integrated Reporting and Deferred Taxation in UK-listed Companies

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## Abstract

Over time, research has primarily focused on analysing the value relevance of Integrated Thinking and Reporting (IR) and deferred taxation (DT) in isolation, overlooking their interconnectedness. This study fills this gap by examining their indirect relationship using a sample of 399 publicly listed UK companies from 2013 to 2022, totalling 3,865 firm observations. Employing panel data regression models with industry and year fixed effects, supplemented by Seemingly Unrelated Regression models for robustness testing, the paper's findings reveal a significant positive association between IR and firm value. Additionally, the analysis demonstrates a negative coefficient between DT expense and DT liability with firm value, while the market perceives deferred tax assets positively. Furthermore, the paper's results suggest no moderating effect of IR on net deferred tax expenses. This research contributes new insights to the existing literature on IR and enhances understanding of the market implications of DT and IR interactions.

**Keywords:** Deferred tax expense, Net deferred tax liabilities, Integrated Reporting Framework, Value Relevance, Deferred tax assets

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## Introduction

Integrated reporting, or <IR>, is a relatively new concept in the context of accounting and financial reporting. In the past 10 years, IIRC (2013) has developed the IR global Framework, which aims to create "a world in which integrated thinking is embedded within the mainstream business practice." Because of its potential to enhance financial reporting quality over the short, medium, and long term as well as provide a comprehensive understanding of a company's performance and its effects on the environment and society, IR is a promising strategy that has garnered a lot of attention recently (Vitolla et al., 2019).

To provide a more complete view of a company's operations, IR combines financial and non-financial data, including disclosures on many capitals, into a single report (Soriya & Rastogi, 2021). These capitals include financial, intellectual, social, and natural capital amongst others, according to the IIRC (2013) and Velte (2022). As a result, IR has grown to be an essential tool used by companies to educate stakeholders about their social responsibility and environmentally friendly business practices (Dey, 2020).

Businesses are increasingly adopting integrated reporting, recognising its benefits in promoting social responsibility and sustainability. As a result, companies are beginning to acknowledge the potential advantages of integrated reporting in terms of profitability and firm value. Research by Tlili et al. (2019) highlights the significant impact that integrated reporting and sustainable reporting can have on corporate value. Furthermore, empirical studies such as that by Sun et al. (2022) demonstrate a positive correlation between higher business value and greater quality of multiple capital disclosure (MCD). With the growing importance of multi-capital disclosures, it is anticipated that the adoption of integrated reporting and sustainability practices will continue to increase as firms aim to enhance their overall performance and societal impact.

There is considerable debate about whether MCD/IR increases a firm's value relevance. Sun et al. (2022) and Tlili et al. (2019) suggest that MCD/IR has a positive impact on corporate value, however Landau et al. (2020) and Cortesi & Vena (2019) find no significant impact or even a negative one. The conflicting results of this research suggest that the relationship between MCD/IR and corporate value relevance is intricate and contingent upon several factors, such as the country or industry in which the company operates and the quality of the reports. More research is needed to better understand the conditions in which MCD/IR could raise the importance of firm value and look into potential moderating variables.

Deferred taxes also hold significant importance in financial reporting, as they bridge the gap between taxable income and accounting requirements. This aspect is often leveraged to provide informational value,

although it warrants additional research (Flagmeier, 2022). "Deferred taxation" refers to temporary variances between tax and accounting values that result in postponed tax payments. As highlighted by Soliman and Ali (2020), a company essentially acknowledges the variance between taxes paid and those still owed. Studies by Soliman & Ali (2020) and Görlitz & Dobler (2021) have demonstrated the value relevance of deferred taxation items. However, their impact on the relationship between integrated reporting (IR) and corporate value remains unclear. Further exploration is needed to understand how deferred taxes moderate the relationship between multiple capital disclosure (MCD)/IR and business value fully. While existing research suggests the value significance of deferred taxation, a deeper understanding is essential due to its complex implications on a company's financial performance.

The study aims to examine the relationship between deferred taxes and business value, the correlation between IR quality score and firm value, and the moderating impact of IR on the value relevance of deferred taxes. As previously mentioned, the literature that is currently available has looked at the relationship between DT and Market Value (Soliman & Ali, 2020) or the value relevance of integrated reporting (Baboukardos & Rimmel, 2016; Haleem et al., 2020). This will fill the research gap in the literature about the relationships between deferred taxes, IR, and firm value.

## **Literature Review and Hypotheses Development**

### **IR: A short Literature review**

The adoption of integrated reporting (IR) by businesses has attracted considerable attention in the accounting literature, as it is seen as offering a more comprehensive depiction of a company's activities and value creation. Integrated reporting aligns with the concept of integrated thinking, which has been emphasized by the International Integrated Reporting Council (IIRC) since 2013. The importance of integrated thinking was further emphasised in 2021, with modifications highlighting the significance of managing interactions with stakeholders and the environment, as well as overcoming the difficulties of operating within complex ecosystems (IIRC, 2021).

Internal benefits, external benefits, and a decrease in regulatory risks are the three primary advantages of IR (Dumay, 2016; Vitolla et al., 2019). Internal benefits manifest with better judgements about the distribution of resources yield competitive advantages (Vitolla et al., 2019). External benefits arise when meeting the demands of investors who want non-financial information resulting in not only external but also informational benefits (Vitolla et al., 2019). A decrease in regulatory risk occurs when firms are being equipped early in the event that regulators need further information which also helps to ease uncertainties and jeopardies (Dumay et al., 2016). The value relevance of IR is one of the least explored topics, according to Soriya and Rastogi (2022), which supports the findings of other authors' systematic reviews (Dumay et al., 2016; Vitolla et al., 2019) while the theoretical elements of IR are the most studied field of IR. Therefore, the shareholders, possible investors, institutions, and other capital market stakeholders may all profit from the research of value relevance.

Since the IIRC (2013; 2021) adopted and restated the multi-capital disclosures for IR, several researchers have examined the effect of these disclosures on a firm's market valuation; however, in contrast, very few have concentrated on the effect of IR on the capital market. From these, several studies (Haleem et al., 2020; Zhou et al., 2017) discovered evidence of a positive correlation between IR and corporate valuation. The research population, the number of businesses, and the nations under investigation were all different in the studies.

Numerous studies emphasised that South Africa was the first nation to mandate the use of IR (Atkins & Maroun, 2015; Corvino et al., 2020). These studies created an IR score and went further into the disclosures mandated by Integrated reporting capitals. When IR became a requirement in South Africa, several academics compared the two time periods and discovered that company value (Zhou et al., 2017) or earnings valuation had increased in value (Baboukardos & Rimmel, 2016). In a mandated context, integrated reporting has essentially been warmly welcomed.

Integrated reporting and market value have been found to positively correlate in several research papers, albeit in various contexts. In their analysis of Chinese A-share companies, Sun et al. (2022) find that while the quality of material capital disclosure may boost profitability, higher disclosure quality of multiple capitals in IR leads to larger firm value. Dey (2020) looks at Bangladeshi banking businesses and discovers that IR practices have a major beneficial influence on company value. The implementation of IR has a

favourable and considerable influence on the value relevance of other comprehensive income, according to Tlili et al. (2019) research of South African enterprises. According to an analysis of bank-integrated reports by Haleem et al. (2020), integrated reporting significantly affects an organization's value relevance. Market value and earnings valuation have some favourable correlations, according to Baboukardos & Rimmel (2016). Additionally, several studies show that firms with high-quality investor relations have a better market valuation than companies that publish with a lower IR quality score (Barth et al., 2017; Zhou et al., 2017).

Nevertheless, other voluntary contexts, meanwhile, have not received as much research attention. One example of such voluntary settings on the impact of certain elements, such as assurance in one of the biggest European stock exchanges, and the value significance of integrated reporting was given by Landau et al. (2020). The results illustrated the theory that IR has a negative influence on market value based on the premise of the cost concerned school. However, as it counteracted the negative impact, the study showed that the reports' quality mattered for market value. Therefore, it is still uncertain if IR is valuable to the market of voluntary adopters. According to Cortesi and Vena (2019), although IR has no beneficial effect on the value relevance of book value, it does increase corporate disclosure, lessen information asymmetries, and improve the quality of reported profits per share. According to Fernando et al. (2018), the adoption of integrated reporting has no impact on the applicability of accounting data. Abhayawansa et al. (2018) discovered that since the reports lacked the necessary information in a format that was desired or with sufficient detail, IR was not helpful for firm evaluation. Interviews with fund managers and analysts indicated a poor value for integrated reporting, even with institutional backing, according to Slack and Tsalavoutas (2018). Even if Flower (2020) is somewhat critical of integrated reporting, investors are aware that the integration of non-financial reporting has some value. Thus, based on the summary of the findings from the literature, it is expected that:

**H1:** The market value of firms is positively associated with integrated thinking and reporting score.

#### **Deferred taxation: A short literature**

Deferred taxes have long been a subject of contention and scrutiny within financial accounting, owing to their role in reconciling differences between taxable income and accounting requirements. Over the past few decades, numerous studies have delved into the value relevance of deferred taxes, aiming to understand their informational significance for financial statement users and their potential manipulation by firms. The investigation into the variations in book taxes and their potential implications, whether temporary or permanent, has attracted scholarly attention due to its complexity and relevance in understanding tax avoidance strategies (MacCarthy, 2021; Machdar, 2022). Despite existing research shedding light on this area, there remains a need for further investigation to ascertain the market's interest in deferred tax information of this nature. This literature review synthesizes key findings from influential studies on deferred taxes, focusing on their value relevance and implications for accounting practice and regulation.

Amir et al. (2001) explored the value relevance of deferred taxes in US GAAP, finding that deferred taxes were indeed value-relevant due to their deferral of tax payments. Their study highlighted the importance of categorization in improving the informational content of deferred taxes. Chang et al. (2009) investigated the value relevance of deferred tax accruals under the income statement method, finding positive associations between recognized deferred tax assets and firm value. Their study highlights sector-specific implications and signals that deferred tax liabilities reflect future tax payments, particularly for loss-making companies. Wong et al. (2011) offered conceptual solutions for enhancing deferred tax value relevance in New Zealand, after analysing the measurement option between comprehensive and partial allocation. They proposed partial allocation and discounted measurement as methods to improve relevance and understandability, and conclude that deferred tax liability is relevant for equity valuation. Hanlon et al. (2014) compared the value relevance of deferred tax elements under the balance sheet method with the taxes payable method. While they found limited additional value relevance for deferred tax balances under the balance sheet method, they emphasized the deferred tax on revaluation of assets are valued by investors as real liabilities.

Mear et al. (2020) examined the incremental value relevance of balance sheet deferred tax accounting, particularly focusing on the choice between balance sheet method rather than the tax payable method. Their results supported the relevance of footnotes on deferred tax to be higher than the amounts recognised per the balance sheet method. Guia & Dantas (2020) investigated the market value impact of deferred tax assets in the Brazilian banking industry. Their findings revealed a negative relationship between DTAs and market value, signalling investor concerns about the quality of equity and profit in the context of asymmetries



between taxable and corporate earnings. Görlitz and Dobler (2021) conducted a systematic review of empirical evidence on deferred taxes' value relevance and their role in earnings management in the US. Their findings suggest that while there is substantial evidence supporting the value relevance of various deferred tax items, there is limited evidence of firms using deferred taxes to manage their earnings. This emphasises the importance of understanding the dynamic relationship between deferred taxes and firm value. Using the Jones & Miller Model, Soliman and Ali (2020) determine the value significance of deferred tax in Egyptian listed enterprises. According to Sutopo et al. (2021), a big negative deferred tax paired with a large negative accrual has no effect on the link between profits and company value, whereas a large positive deferred tax combined with a large positive accrual weakens it. After analysing the German accounting system, Flagmeier (2022) comes to the conclusion that aggregate deferred taxes are significant to value. As Soliman & Ali (2020) mentions that deferred taxes are a significant component of discretionary accruals and helps to smooth profits and losses for aggravated earnings management, it is expected that:

**H2:** The market value of listed firms would be negatively associated with deferred tax expense and deferred tax income.

**H3:** The market value of listed firms would be negatively associated with deferred tax assets and deferred tax liabilities.

Given the benefits of the Integrated Thinking and Reporting process from the IIRC, especially based on the value creation activities mentioned in the IIRC (2021), as well as value preservation and disclosure on value erosion as well, it is expected that the Integrated Reporting system would moderate the value relevance of deferred taxes. Thus, the paper expects that:

**H4:** The market is of the opinion that there is a moderating effect of IR on Deferred Taxes.

## Methodology

To generate an appropriate model, the paper modifies the use of the Ohlson (1995) model which had been adopted by Landau et al. (2020).  $MV_{j,t}$  refers to the market value of a firm  $j$  at time  $t$ . The coefficients ( $\alpha$ ) of the independent variables represent their contribution to the variation in  $MV_{j,t}$ . The fixed effects register for endogeneity. The error term ( $\varepsilon$ ) represents the unobserved factors that affect  $MV_{j,t}$ . The model estimates the values of  $\alpha_0$ ,  $\alpha_1$ , and  $\alpha_2$  that best fit the data. As per Tliti et al. (2019), negative book values have been deleted from this analysis. This method has been extensively used in previous literature (Roychowdhury & Watts, 2007). For NI, the signed log method was utilised in this study to allow for the direction of movement of the variable. This method is mostly used for financial statement data, especially when there is much possibility of the variable being negative (Siimon & Lukason, 2021). All values are logged due to differences in the sizes of the listed companies across the UK (Cooke et al., 2009). The following equation helps to solve the first hypothesis:

$$MV_{j,t} = \alpha_0 + \alpha_1 BV_{j,t} + \alpha_2 NI_{j,t} + \alpha_3 IR_{j,t} + Industry FE + Year FE + \varepsilon$$

[1]

Where:

$MV_{j,t}$  is the natural logarithm of market value

$BV_{j,t}$  is the natural logarithm of book value of equity

$NI_{j,t}$  is the natural logarithm of net income (profitability) for the year

$IR_{j,t}$  is the Integrated Reporting Score proxy

IndustryFE is the industry fixed effects

YearFE is the year fixed effects

$\alpha_0$  is the intercept

$\alpha_1$  is the coefficient for BV

$\alpha_2$  is the coefficient for NI

$\alpha_3$  is the coefficient for IR

$\varepsilon$  is the error term

The paper uses a similar methodology for the Ohlson model as Landau et al. (2020). The IR framework score is an objective rating provided by Refinitiv Eikon (Asset 4 successor) software based on their in-house assessment. Therefore, the integrated strategy in MD&A score as presented by the database can be

used as a proxy for integrated thinking and reporting quality scores (Dimes, 2023). Financial and non-financial data, encompassing profits, book value of equity, and net deferred taxes, were aggregated from the Refinitiv Eikon database. This extensive repository houses data from numerous companies and employs firm-reported information to compute scores reflecting a firm's achievement, stakeholder engagement, and overall effectiveness (Thomson Reuters, 2023).

To account for the subsequent hypotheses, equation 1 will be modified to include components of deferred taxes. In Equation 2, the paper follows Laux (2013), Lopez et al. (2020) and Flagmeier (2022) in segregating the deferred tax items into positives and negatives to consider the effects of each sub-item as combining both could lead to a loss of valuable information about its impact. Furthermore, to examine hypothesis 3, the paper adopts a moderating interaction effect methodology. Sutopo et al. (2021) employed moderating effects which made use of the interaction of the two independent variables. This paper adopts the latter methodology to examine the moderating effects of the Integrated Thinking and Reporting score on the value relevance of deferred taxation items. This methodology is not new to research as it has been employed in several other studies (Obeng et al., 2020; Rahman et al., 2020).

**The updated model is to include deferred taxation and moderating effects as per below:**

$$MV_{i,t} = \alpha_0 + \alpha_1 BV_{j,t} + \alpha_2 NI_{j,t} + \alpha_3 IR_{j,t} + \alpha_4 DTEA_{j,t} + \alpha_5 DTIA_{j,t} + \alpha_6 NDTA_{j,t} + \alpha_7 NDTL_{j,t} + IRxNDTEA + IRxNDTAL + FE + \varepsilon$$

[2]

where:

DTEA<sub>j,t</sub>: the deferred tax expense deflated by total assets

DTIA<sub>j,t</sub>: the negative deferred tax expense (deferred tax income) deflated by total assets

NDTA<sub>j,t</sub>: the net deferred tax asset deflated by total assets

NDTL<sub>j,t</sub>: the net deferred tax liability deflated by total assets

IRxNDTE: interaction term to determine moderating effect on net deferred tax expense deflated by total assets

IRxNDTAL: interaction term to determine moderating effect on net deferred tax asset or liability deflated by total assets

And the other variables as explained above

Onali et al. (2017) and Baltagi et al. (2003) advocated for the use of the Hausman test before choosing the regression model. Random fixed effects panel data regression was rejected after the Hausmann test; therefore, the fixed effects model is adopted. To improve the above results, the Seemingly Unrelated Regression Model will be adopted. The latter will also serve as a robustness test, to dissipate any concerns about the independent variables potentially unrelated to the dependent variable.

## Results

The table below presents the descriptive statistics of the dependent as well as the independent variables. The data has been gathered from Refinitiv Eikon (successor of Asset4) from a sample of UK listed companies. UK companies were chosen for this study owing to their documented rigorous regulatory frameworks, which implement extensive disclosure mandates and guarantee the accessibility of both high-quality financial and non-financial data. Moreover, the selection of UK companies was influenced by the prominence of the country's stock exchange, making it an ideal setting for comprehensive analysis. The study focused on public companies over an ten-year period from 2013 to 2022. After excluding less than 5 firm-year observations, the number of firm observations is 3,865. This is in line with Tlili et al. (2019) who used a minimum of 6 years for their study. The average firm observations for this study for the 11 years for each firm was 9.7 observations per firm, and the number of firms studied amounted to 399 companies.

The descriptive statistics of the sample include market value with an average of EUR 4.32 billion market capitalisation, with an average book value of equity around 1.85 billion. The average profit was around the 200 million. The IR score had a mean of 34.45 and the net deferred tax expense (average of positive and negative) was 4 million and if calculated absolutely without negative sign, then it was around 18 million and the net deferred tax liabilities was 157 million before even considering its absolute amount. Thus, since the amounts of deferred taxes are significant, it has the possibility to influence the profitability and therefore net assets. After the signed natural logarithmic or deflation by total assets has been carried out, the independent variables have been assessed using the Pearson Correlation test as presented in Table 1.

**Table 1: Pairwise Pearson correlations**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) BV <sub>j,t</sub>	1.000								
(2) NI <sub>j,t</sub>	0.153	1.000							
(3) IR <sub>j,t</sub>	0.479	0.065	1.000						
(4) DTEA <sub>j,t</sub>	0.040	0.154	0.006	1.000					
(5) DTIA <sub>j,t</sub>	-0.033	0.040	0.021	0.294	1.000				
(6) DTAA <sub>j,t</sub>	-0.069	0.030	0.014	-0.019	0.069	1.000			
(7) DTLA <sub>j,t</sub>	0.073	-0.021	0.056	-0.112	0.266	-0.017	1.000		
(8) IRxNDTEA <sub>j,t</sub>	-0.005	0.147	-0.056	0.494	0.516	0.011	0.115	1.000	
(9) IRxNDTLA <sub>j,t</sub>	-0.252	-0.046	-0.457	0.029	-0.226	0.053	-0.662	-0.123	1.000

Source: Author's Research

As expected, the Pearson correlation between the book value of equity and net income is positive. The larger the company's capital base, it is expected that the listed company is profitable. This is in line with several studies and the profitability and growth concepts (Landau et al., 2020). The highest correlation coefficient was -0.66 between deferred tax liabilities and the moderating effect involving deferred tax liabilities. However this is not a cause of concern since multicollinearity is concerning when the coefficient becomes greater than 0.8 or 0.9 (Vitolla et al., 2020). Another statistical test which is of use is the variance inflation factor (VIF).

**Table 2: Variance Inflation Factors (VIF)**

Variable	VIF	1/VIF
IRxNDTLA <sub>j,t</sub>	2.66	0.38
DTLA <sub>j,t</sub>	2.18	0.46
IR <sub>j,t</sub>	1.80	0.56
IRxNDTEA <sub>j,t</sub>	1.70	0.59
DTIA <sub>j,t</sub>	1.49	0.67
DTEA <sub>j,t</sub>	1.41	0.71
BV <sub>itj,t</sub>	1.35	0.74
NI <sub>itj,t</sub>	1.06	0.94
DTAA <sub>j,t</sub>	1.02	0.98
Mean VIF	1.63	

Source: Author's Research

According to commonly used rules of thumb, there was no significant evidence of multicollinearity among the variables since the variance inflation factors (VIF) did not exceed 10 which suggest that the independent variables in the regression model are not highly correlated with each other, which strengthens the reliability of the estimated coefficients and their interpretation (Anderson & Gupta, 2009; Landau et al., 2020). It is to be noted that adding individual interaction terms for each deferred tax variable increased the VIF due to repetitions. However, since the net deferred tax expense interaction and the net deferred tax liabilities interaction terms theoretically represent both elements, thus it is not necessary to include individual interaction terms. The next step after testing for multicollinearity is the regressions of the independent variables to the dependent variable. Table 3 presents the results of such regressions based on two robust regression techniques, both of which can be applicable to the research objectives and hypotheses.

**Table 3: Regression Results output**

	Fixed Effects Regression	Robustness Test Seemingly Unrelated Regressions
	MV <sub>j,t</sub>	MV <sub>j,t</sub>
BV <sub>j,t</sub>	0.836*** (86.47)	0.796*** (82.51)
NI <sub>j,t</sub>	0.0142*** (12.53)	0.0164*** (13.82)
IR <sub>j,t</sub>	0.00513*** (8.08)	0.00261*** (4.08)
DTEA <sub>j,t</sub>	-21.66*** (-3.74)	-38.05*** (-6.23)
DTIA <sub>j,t</sub>	(1.81) (-0.53)	(7.07) (-1.84)
DTAA <sub>j,t</sub>	30.94*** (3.92)	38.00*** (4.44)
DTLA <sub>j,t</sub>	-4.670*** (-6.64)	-4.487*** (-6.06)
IRxNDTEA <sub>j,t</sub>	0.07 (1.63)	0.08 (1.76)
IRxNDTLA <sub>j,t</sub>	-0.0447*** (-3.60)	-0.0412** (-3.01)
_cons	3.707*** (20.03)	4.537*** (24.67)
N	3,865.00	3,865.00
F	1,386.60	-
p-value	0.00	0.00
Akaike Information Criterion	9,505.20	10,102.30
R <sup>2</sup>	0.77	0.73
R <sup>2</sup> <sub>adj</sub>	0.77	-
Industry Fixed Effects	Yes	-
Year Fixed Effects	Yes	-

Source: Author's Research

The book value of equity based on the Fixed effects model and the seemingly unrelated regression model have significant positive coefficients of around 0.8, which means that size or net assets are positively viewed by the market. Moreover, profitability registers positive coefficients of approximately 0.014 or 0.016, indicating a positive inclination towards profitability in investors' decision-making processes concerning businesses.

Hypothesis 1 is supported by the findings, as evidenced by the positive and statistically significant coefficient associated with the Integrated Thinking and Reporting score. The results indicate that an increase in the Integrated Thinking and Reporting score leads to a corresponding rise in market value, with the coefficient estimated to be 0.005 or 0.0026.

Regarding hypothesis 2, the deferred tax expense is valued negatively by the market. Since the variable is deflated by total assets, the coefficient might seem large but it is to be seen comparatively with other aspects. The coefficient is -21.66 for deferred tax expense and is significant whereas for deferred tax income is not. The stock exchange does not assign a significant positive value to deferred tax income; rather, it tends to attribute a negative valuation to deferred tax expense.

Both net deferred tax assets and liabilities are viewed significantly by the market concerning hypothesis 3. The market negatively views deferred tax liabilities whereas investors view deferred tax assets much more positively than they negatively view deferred tax liabilities. Also, investors believe that integrated thinking and reporting tend to decrease the negative impact of net deferred tax liabilities. However, there is no observable moderating effect of integrated thinking and reporting on net deferred tax expenses as perceived by the market.

### **Discussion of the Results**

The first hypothesis tests the adoption of an integrated reporting framework. The IR score ranged from 0 (not adopting the Integrated Thinking and Reporting concept since it is voluntary) to 99, which subjected each company to a uniform evaluation. Given that integrated reporting cannot be evaluated in isolation, the study also examined the value relevance of the book value of equity and net income as control variables. This approach acknowledges the interplay between integrated reporting and these traditional financial metrics, providing a comprehensive assessment of their combined impact on market valuation. Consequently, the findings indicate that Book Value (BV), Net Income (NI), and Integrated Reporting (IR) serve as relevant and significant indicators influencing the market value of a listed firm. This observation aligns with previous research, suggesting that investors place significance on Integrated thinking and reporting, resonating with the commitment to short-, medium-, and long-term value creation (Dey, 2020; Sun et al., 2022).

The second hypothesis tests the value relevance of deferred tax expenses and deferred tax income. From the results, the market finds informational values mostly from deferred tax expenses only. The market is not so much concerned with the effects when there is deferred tax income. This shows that investors are mostly interested in the short-term value erosion process as presented in the update of the IR framework in 2021 (IIRC, 2021). The market behaviour could also be explained through the signalling theory whereby relevant information has the ability to decrease information asymmetry and thus the market is aware of the deferred tax expenses increases could mean that there would be scrutiny of other parts of deferred tax components (Smith & Pennathur, 2017).

The third hypothesis tests for the value relevance of deferred tax assets and liabilities. From the results, the market values significantly deferred tax assets and deferred tax liabilities. The stock exchange associates deferred tax assets with a positive image of the company, perhaps relating to the future earning potential from the definition of an asset. This result is consistent with Chang et al. (2009) but contrary to Guia and Dantas (2020). Due to the difference in the coefficients, investors may also be less concerned with net deferred tax liabilities but more interested in net deferred tax assets due to cash flow implications and future tax planning opportunities (Flagmeier, 2022; Hamilton, 2018).

The moderating effect of IR on net deferred tax expenses is not present. This suggests that from the perspective of the market, IR does not, in the short term, help with decreasing deferred tax expenses. This is due to a planning from management which could range from medium to long term. Thus, it would be more appropriate if IR were significant in deferred tax assets or liabilities moderation. Indeed, there was a significant effect of IR on net deferred tax liabilities from the point of view of the market, that investor believe in the integrated thinking and reporting process to mitigate risk of manipulation of deferred taxes. These findings align partly with the previous research by Sutopo et al. (2021) on the moderating effects of large deferred tax assets. In line with the recommended prudential approach by Gelman & Stern (2006), the paper interprets these results cautiously, considering the potential implications for the value relevance of the integrated reporting framework score interaction with the deferred tax items. As such, only integrated reporting score moderates how the market values net deferred tax liabilities which are one important component of long-term book-tax differences. This is in consistent with the benefits of integrated reporting

pressing management to think about the creation of long-term value of the business, in which short-term deferred tax expenses may not have a major role.

## Conclusion

The paper investigates the value relevance of integrated reporting in voluntary settings in the UK. This study is important in multifaceted ways. It, subsequently, addresses two important aspects that have received limited attention in the literature. Firstly, the paper investigates the value relevance impact of Integrated Thinking and Reporting. Second, the paper explores the value relevance of the distinct components of deferred taxes. Third, the paper assesses the potential moderating effects of the integrated reporting score on the value relevance of deferred taxation items. To the best of the author's knowledge, these relationships have not been studied before.

This research utilises a sample of UK-listed companies, covering the period from 2013 to 2022, and includes financial data from 399 listed companies and 3,865 firm-year observations. To answer the research hypotheses, the paper employs a literature-driven analytical approach, utilising a panel data regression model with fixed effects to estimate the value relevance coefficients of deferred taxation and the integrated reporting framework score.

The results from the panel data regression model with fixed effects and the seemingly unrelated regression reveal a significant positive relationship between the integrated reporting framework score and firm value. Additionally, the analysis indicates a negative coefficient for deferred taxation expense and deferred tax liabilities, indicating its detrimental impact on firm value. Investors may view high deferred tax expenses in the statement of profit and loss adversely due to its ability to decrease profit and the deferred tax liability as loss of future cash flows. In addition, there is a positive value relevance of deferred tax assets, as a way for investors to signal their appreciation for future cash inflows. Furthermore, the decomposition of the panel regression model suggests no moderating interaction effect of IR on the value relevance of deferred tax expenses. However, investors view integrated thinking and reporting as moderating the effect of the negative value relevance of net deferred tax liabilities in the long run.

This study holds significant implications for multiple stakeholders. Policymakers and standard-setters can derive insights into the value relevance of integrated reporting within voluntary frameworks, informing their decisions regarding its implementation. Practitioners are alerted to consider the impact of deferred taxation on firm value and the significance of integrated reporting. Additionally, avenues for further exploration into contextual factors' moderating effects on the integrated reporting-firm value relationship are opened.

Consequently, this paper contributes to the literature by scrutinising the value relevance of integrated reporting, with a focus on deferred taxation and the updated IR framework. These findings deepen the comprehension of the dynamic relationship among integrated reporting, deferred taxation, and firm value.

Although this paper contributes valuable insights into the value relevance of integrated reporting within voluntary frameworks in the UK, it is crucial to recognise certain limitations. The analysis is confined to a singular country, potentially constraining the applicability of the findings to other geographic areas. Subsequent research endeavours could enhance the scope by encompassing a more diverse array of countries and regions. This broader approach would facilitate a more comprehensive comprehension of the value relevance of integrated reporting across varied contexts.

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# Stormwater Management with Public Amenities at East Coast Park, Singapore

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## Abstract

Singapore lies about 1 degree latitude north of the equator and experiences rainfall throughout the year primarily through the Northeast monsoon from December to March and the Southwest monsoon from June to September. Due to the small landmass of about 700km<sup>2</sup> coupled with rapid urbanization, surface runoff from storm events is a major concern. The Public Utilities Board (PUB), a statutory board under the Ministry of Sustainability & the Environment (MSE), has developed a 3-pronged approach to manage stormwater, namely, provision of drainage in advance of urban developments, implementation of flood protection measures and continual drainage improvements to be in line with climate change needs.

This paper outlines the approach to stormwater runoff monitoring and quality management in Singapore. Together with a case study project where a traditional concretized drain system was upgraded to enhance flow capacity in view of increased runoffs and to accommodate climate change requirements, as well as inclusion of water sensitive design features. A holistic approach combines continuous monitoring of existing and upcoming changes with concurrent rehabilitation and reconstruction of drainage features. About 300 water level sensors and an SMS alert system are deployed at flood-prone drainage and canal locations to provide data real-time site conditions during heavy storms. These are backed by a comprehensive mechanism of water quality monitoring from source to tap and testing of samples collected from reservoirs, waterworks/desalination plants and distribution systems. The intent of flood management and water storage has been furthered by harnessing the assets and working with other statutory agencies to bring people closer to water thereby contributing to the Green-Blue plan whereby the country becomes a City of Gardens and Water under the Active, Beautiful, Clean Waters (ABC) programme. This work was performed by the author as part of his work at AECOM.

**Keywords** — stormwater management, water sensitive urban design, therapeutic plants

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## Introduction

This paper covers the approach to stormwater management in Singapore, and particularly a project within a coastal park area, in which the traditional concrete drainage system is combined with water sensitive urban design feature using a vegetated swale for runoff treatment. A key impact arising from climate change is the monitoring and conveyance of stormwater runoff especially in extreme events. Two-third of the limited land mass of the country is utilized as water catchment, the extensive drainage system made up of drains, rivers, stormwater collection ponds and canals of over 8000 km collects rainwater and channels to 17 reservoirs that form 1 out of the 4 parts for water supply to the residents and industries. As a water stressed country, Singapore has developed an integrated approach for stormwater management, capturing some for water-supply and storage purposes and minimizing flood risk at the same time. This is part of the Four National Taps strategy in which stormwater is collected in catchment areas and treated for use as seen in Figure 2. The other sources are as follows:

- Through water purchase agreement with Malaysia i.e., imported water.
- High-grade reclaimed water i.e., NEWater
- Sourcing from desalination plants i.e., Desalinated water.

As part of the case study shared, the existing drainage system was required to be upgraded. This was to allow for increased flows expected from upstream developments as well as need to blend with the upcoming park redevelopment to be done by Others. Development of the outfall area has been undertaken with people centric features such as seating areas and therapeutic plants to enhance stakeholder experience. Thus, by harnessing the assets and working with other statutory agencies in a collaborative manner, has brought people closer to the water thereby contributing to the Blue-Green plan whereby the country becomes a City of Gardens with urban stormwater managed as part of the Active, Beautiful, Clean Waters (ABC) programme.

## Literature review

This paper is based on design approach and construction guidelines from the Singapore water industry. Concepts of water sensitive urban design, stormwater management and the like are in accordance with those set by the Public Utilities Board, the water agency.

## Methodology

The national water agency of Singapore, Public Utilities Board (PUB), has developed a 3-pronged approach to manage stormwater, namely, provision of drainage in advance of urban developments, implementation of flood protection measures and continual drainage improvements to be in line with climate change needs. For Singapore, climate change has meant an increase in the frequency and intensity of rainfall events as historical data over the past 30 years has indicated. This is indicative in the increase in maximum hourly rainfall tracked by the meteorological agency which in turn has led to an increase in the average number of days with more than 70mm rain in a 1-hour period at an average rate of 1.5 days<sup>1</sup>. PUB has adopted the Source-Pathway-Receptor approach to tackling stormwater runoff in the country, as there is a challenge in terms of space with drains and canals adjacent to urban buildings and infrastructure. Under this methodology, which came out of the findings of the Expert Panel on Drainage Design and Flood Protection Measures<sup>2</sup> in 2012, a range of intervention measures were recommended to build resilience for Singapore's stormwater system. Figure 1 provides an overview of this Source-Pathway-Receptor approach.

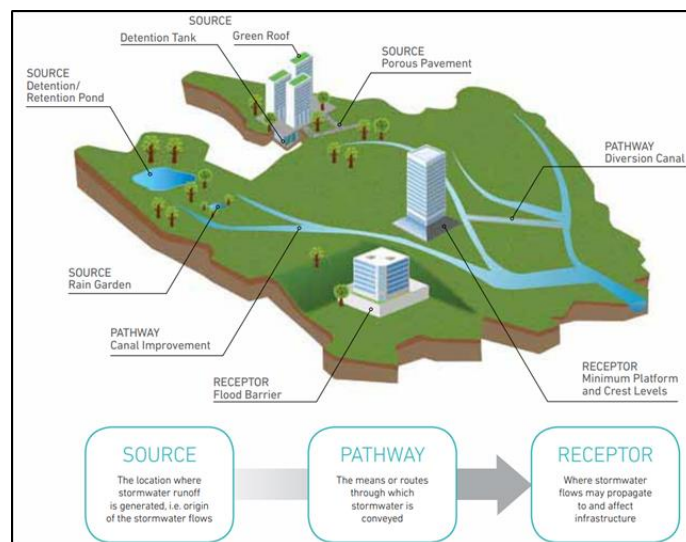


Figure 1: Stormwater Management<sup>3</sup>

- **Source category:** where stormwater runoff is generated, the flow is controlled through provision of detention tanks, porous pavements, green roofs, water sensitive urban design features, retention ponds amongst others.
  - **Pathway areas:** where stormwater is conveyed through, the flow is managed by the construction and widening/deepening of drains and canals, refurbishment of older outlets, and the addition of centralized detention tanks with diversion canals to channel excess runoff.
  - **Receptor locations:** where stormwater collects and has the potential to impact life and property, the measures include raising of platform levels for structures, provision of crests at entrances, implementation of flood barriers and gates to keep out water as well as storage in reservoirs.
- Figure 3 provides an overview of this Source-Pathway-Receptor approach.

The intent is to get the strategy right from the start by setting out clear guidelines and enhancements for the system. Early allocation of land for drainage in newer towns and developments with advance infrastructure construction with relevant protection measures included in design ensured that the space for management of stormwater flows was reserved. Appreciating the limitation of available space for drainage systems to cater to the extreme storm events, the government has mandated since 2014, for developments greater than 0.2 hectares to implement source control measures to slow down the flow of stormwater into the public drainage system. The design standards and relevant Code of Practice (COP)<sup>4</sup> were refined in 2011 to consider more intense rainfall events for drainage systems and updates to the Intensity-Duration-Frequency (IDF) curves have enabled localized requirements for the curves to be considered, considering regional

variations in rainfall instead of a single curve. Since 2014 all new developments and re-developments of 0.2 hectares or more are required to implement ‘source’ solutions to slow down stormwater runoff entering the public drainage system such as detention tanks or rain gardens and bioretention swales ie sustainable urban drainage systems. Through the ground elevation guidance, PUB advises on the minimum platform level for structures, and this level is increased for more critical structures (e.g. tunnel entrances, mass rapid transit systems amongst others) by accommodating higher rainfall return periods i.e., 50 years, 100 years (‘receptor’ protection). PUB’s island-wide drainage improvement programme to continually upgrade drainage infrastructure includes cater for new developments, as well as alleviate flood risk and rehabilitate aging infrastructure. These ‘pathway’ improvements include widening and deepening the existing drains and canals, constructing diversion canals and catchment level detention systems. The projects are easily tracked using the interactive map available online as shown in Figure 2 below. A holistic approach combines continuous monitoring of existing and upcoming changes with concurrent rehabilitation and reconstruction.

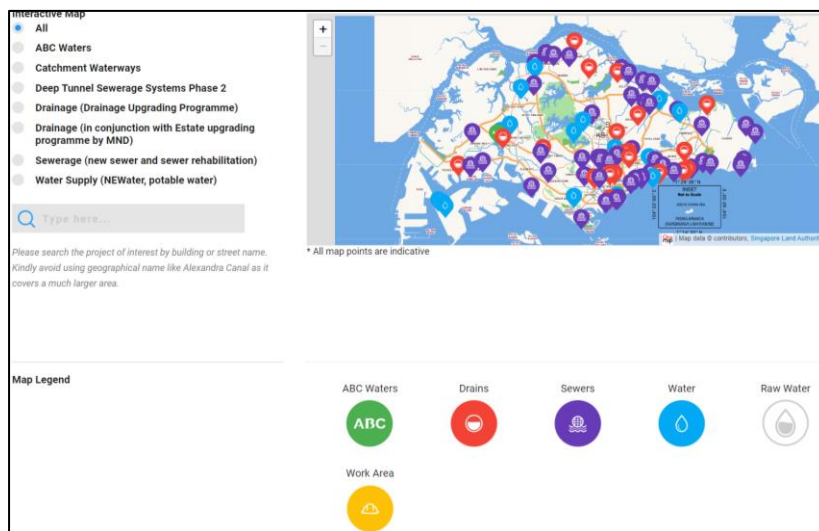


Figure 2: Locations of Project Works<sup>7</sup>

PUB has a dedicated Catchment and Waterways Operations System for real-time monitoring of reservoir and drainage operations to capture storm related information in a single platform (refer Figure 3). About 300 water level sensors are deployed at flood-prone drainage and canal locations to provide data real-time site conditions during heavy storms. These provide information on water levels in the drainage network which enhances the monitoring of site conditions and response time. At selected critical locations, CCTV’s have also been placed to view pictures of the drainage condition, alongside the water level sensors. With a time-lag of 5 minutes, the CCTVs are useful to the Board & public to gauge the condition of stormwater drainage system in the vicinity.

An SMS alert system as shown in Figure 6 has been developed and is available for the public to subscribe for information on rising water level in their vicinity. The data is tied to the weather report through a collaborative approach between the agencies for public knowledge. It is free of charge and provides benefit to users by informing the public on potential flash floods based on the nearest water level sensor station. The details provide advice on the locations of potential flash floods to avoid as well as the time of the alert being generated. In addition, information on flash flood occurrence as well as subsidence is provided to users that also helps for traffic management. Besides, information is given out through social media as well as radio broadcasts.

These are backed by a comprehensive mechanism of water quality monitoring from source to tap and testing of samples collected from reservoirs, waterworks/desalination plants and distribution systems. Annually, almost 450,000 water quality tests are undertaken for raw and treated water through sample collection as well as online sensors and tests across 300 parameters undertaken at PUB’s accredited water quality laboratories. In reservoirs and waterways, online monitoring profiler systems are placed which provide data on physical, chemical, and biological parameters. NUSwan (New Smart Water Assessment Network) are smart robots disguised as life-sized swans which collect water quality data autonomously near

water surface and provide spatial water quality data and are especially useful in reaching remote locations within the catchment locations. Complementing these is a live Fish Activity Monitoring System (FAMS) to monitor water quality in the systems by providing counts of fish via video cameras and image analysis software – abnormal water quality triggers alerts which can be then investigated further. Mobile PUB laboratories can test up to 16 parameters online using the equipment installed within the vehicle which gives efficiency in times of incidents.

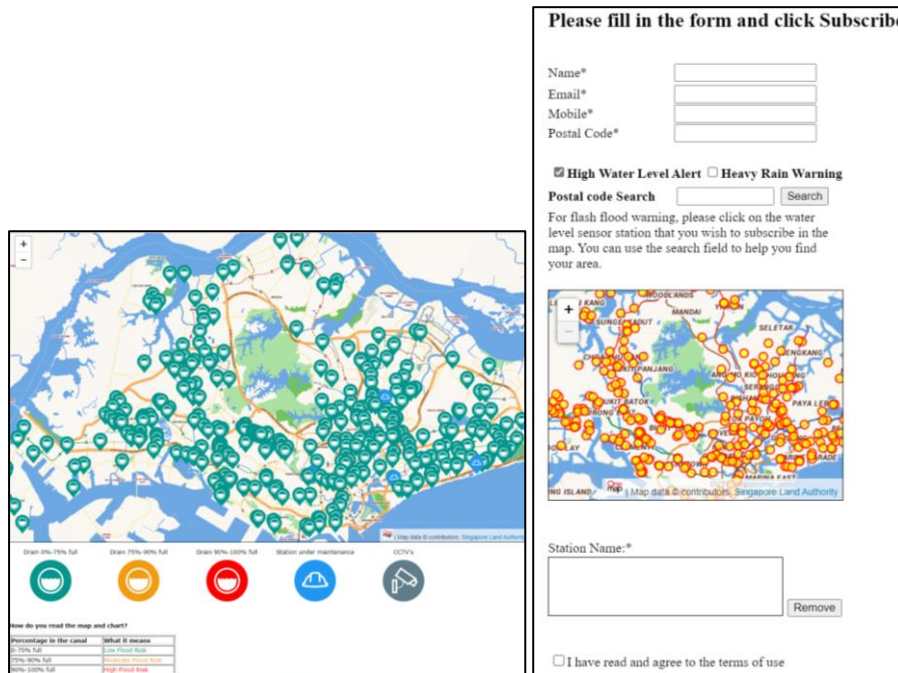


Figure 3: Water Level Sensor and Online Form for messaging service

The intent of flood management and water storage with living spaces cohabiting with public needs is to integrate the stormwater system with the surrounding environment thus creating community spaces. These include detention/retention features such as bioretention basin, vegetated swales, implementation of cleansing biotopes and sedimentation basins amongst others to slow down peak runoff as well as improve the quality of water. The primary aims are to reduce the urban load of Total Suspended Solids (TSS) by 80%, Total Nitrogen (TN) by 45% and Total Phosphorus (TP) by 45% from runoff before it reaches the waterways, which in turn contributes to cleaner systems with comparatively lower maintenance needs. To encourage structural growth of plants and concurrently to bring back wildlife, the concept of habitat cells which incorporates vegetated reinforced soil slope (VRSS) as a soil bioengineering system has been developed. In 2018, guidelines were fine-tuned based on latest research and development findings as well as case studies alongside section on construction management and maintenance of such features. The organization employing the author has been involved through a dedicated Water & Urban Development team to support statutory boards as well as private sector developers in drainage and catchment projects, with focus growing on ABC aspects in renewal projects. The government has initiated and encouraged a certification of projects and qualification for professionals who can contribute to such projects through the ABC Waters Professional (ABC WP) programme<sup>5</sup> which complements the traditional Professional / Chartered Engineer (PEng / CEng) programs.

#### Case Study - Parbury Outlet Drain with ABC (Blue-Green) Features.

This section provides an overview of a case study project to redevelop an outlet drain at Parbury site at East Coast Park (hereafter referred to as 'ECP') with ABC enhancements<sup>6</sup> at connecting to the sea is shared to demonstrate the change that can come from a well thought of approach for redevelopment of stormwater management projects. It was carried out as part of the upgradation of an existing concrete drain to increase capacity at Parbury location within the East Coast Park in the south-east part of Singapore. The site is close to carpark F2 and the almost 300m long drainage improvement works were carried in coordination with multiple agencies who were planning to upgrade the surrounding vicinities as part of regeneration of the

park. In anticipation of upstream upcoming developments and periodic upgrading of outlet drain, a major bottleneck for conveyance was resolved at the outlet by removal of the existing pipe drain with box structure that doubled up as a space for public to access and enjoy (refer Figure 4 and 5).

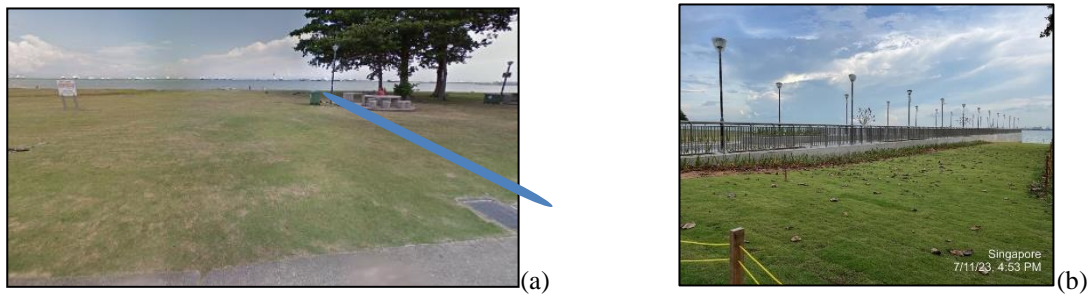


Figure 4: Replacement of concealed pipe outfall drain marked in blue.  
(a) with box structure and planting on sides (b)



Figure 5: Public amenities provision as seating area, lighting, planter boxes  
(proposed and actual)

A short section of surface flow area beside the existing drain was converted into a vegetated swale (refer Figure 6) to provide cleansing action for pollutants from the adjacent car-park area. There being space constraint, the provision is expected to have limited improvements with primary function envisaged for Total Suspended Solids reduction.

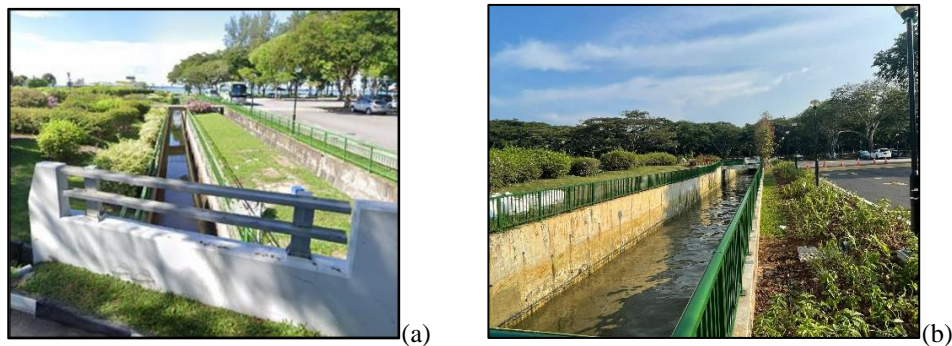


Figure 6: Provision of vegetated swale in lieu of overland flow  
(a): original condition, (b): implemented swale.

A detailed discussion with the National Parks Board (NParks), which maintains the park space beyond the dedicated drainage reserve, was conducted to ensure that the planting palette for trees and shrubs aligns with the overall redevelopment intent. The specific greenery provision is meant to blend with the vision to develop this part of the overall park as a therapeutic zone (refer Figure 7). The coordination is part of the collaboration between PUB and NParks which have overlapping and adjacent developments and land ownership.



Figure 7: Planting palette implemented for Parbury outlet drain<sup>8</sup>

## Conclusion

This project enhanced the flow capacity of the drainage system by 50% and is expected to increase visitor numbers in this part of the park with the public convenience features provided. Besides stormwater considerations, the structural detailing has been undertaken to cater for future increase in ground levels accounting for future sea level rise to accommodate impacts from climate change as well.

With updated design guidelines, availability of data and collaboration with agencies, stormwater runoff can be managed effectively as well as co-develop as recreational spaces for public. Stormwater management is an ongoing activity which will get more complicated with changes in climate that impact directly on the design and maintenance of the waterways as well as the quantity and quality of runoff.

Detailed clarity on planning requirements by a collaborative approach from government agencies can substantially improve the deliverables of a project, especially considering the new-found appreciation among the populace for green public spaces post-COVID. A balanced approach of renewal in the form of water sensitive details coupled with improvement of drainage measures as part of stormwater management projects and coordinated with other stakeholders to regenerate an area will provide for a better future for people and property.

## Acknowledgement

The author was AECOM's project manager and civil engineer responsible for the design and implementation of this project.

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# Behavioral Health Implications of Autoinflammatory Disease Assessment

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## Abstract

Yao's Syndrome is a rare genetic disorder characterized by changes to the NOD2 gene. Due to the rarity of the condition, we do not have much research on the topic. This decreases the knowledge about the disease for both healthcare providers, and patients with the condition. Because there is not a lot of research/knowledge, medical students do not learn about this which is challenging for patients because they are going to professionals who lack knowledge which leads to patients feeling isolated. This is a qualitative cohort study using a survey using the Likert scaling method. Key findings of the survey showed that the average individual with this condition struggles with daily pain, anxiety, and feelings of isolation and lack of support due to this illness. It is our hope that with this knowledge moving forward, we are able to advocate for patients to gain the support that they need, and that we can provide training on this topic for medical professionals. In doing so, we plan to use this to help better prepare medical professionals and equip them with the knowledge of rare disorders to better serve their patients in a well-rounded manner, treating patients as more than just a statistic.

**Keywords:** Yao's Syndrome, Autoinflammatory Disorder, Chronic Illness, Genetics

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## Introduction

Yao's Syndrome is a chronic and recurrent autoinflammatory disease characterized by episodic fevers and multiorgan inflammation. It manifests with severe pain in joints, abdomen, chest, and other body regions. Its global prevalence is estimated at 1 in 100000 to 1 in 100000 individuals. The inheritance pattern appears complex, with no identified singular genetic cause, although the NOD2 gene is implicated, and familial cases have been reported. This syndrome affects both genders and spans various age groups, through it exhibits a predilection for females. Treatment primarily focuses on alleviating pain and inflammation, commonly involving NSAIDs and Corticosteroids; However, personalized therapeutic approaches are recommended to address individual patient needs (Yao Syndrome: Medlineplus Genetics (N.D)). 17 patients with Yao's syndrome or a related NOD2 mutation disorder were surveyed on a variety of questions involving their disease and how it impacts their daily life. Results of the survey demonstrated the urgent need for increase understanding and awareness of autoinflammatory conditions, as patients frequently endure years of pain and symptoms without proper diagnosis or treatment.

## Literature Review

Given the rarity of Yao's disease and related NOD2 mutation disorders, many patients experience extended diagnostic delays, sometimes spanning decades. The survey revealed a wide spectrum in the duration of time between symptom onset and diagnosis, ranging from a mere two months to as long as 56 years. However, more than half of the surveyed patients remained undiagnosed for a minimum of ten years. This underscores the importance for heightened awareness and education regarding autoinflammatory diseases, ensuring that prospective patients do not endure significant diagnostic delays and subsequently receive timely treatment for their symptoms. Patients were also surveyed regarding the extent to which Yao's or a related NOD2 mutation syndrome. Affects their daily mobility, using a 1-5 scale where 1 signifies no impact and 5 signifies severe impact. The average rating for the severity of impact was 3.8/5. None of the survey respondents related the impact as less than 3/5 in severity, while over half them rated as 4 or 5/5 in severity. This emphasizes the urgent need for greater disease awareness, given that despite its rarity, those affected endure significant pain and disruptions in their lives. Furthermore, patients were surveyed to gauge the impact of their autoinflammatory disease on their quality of life, using the same 1-5 scale. The average score was 4.2/5, with none of the participants rating their disease impact on quality of life as less than 3/5 in severity. Additionally, over one-third of participants rated the impact as 5/5. Lastly, patients were surveyed regarding the influence of their disease on their mental health, employing the same 1-5 scale where 5 indicate a severe impact. The average score was 3.8/5, and only one out of the 17 participants rated the

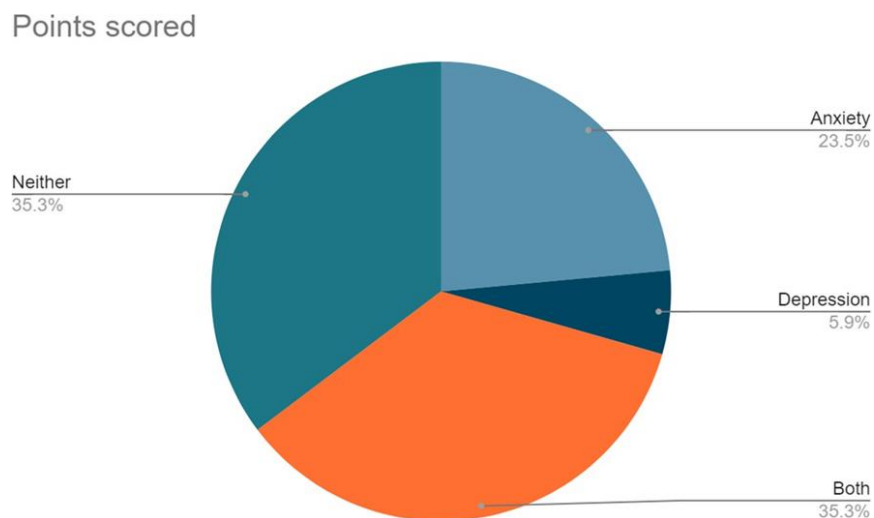


diseases on their mental health, as less than 3/5 in severity. This highlights that autoinflammatory diseases such as Yao's syndrome not only impact patients physically but also affect their mental wellbeing subsequently; participants were queried in the survey about comorbid diagnoses of anxiety and/or depression. Approximately one-third reported both anxiety and depression, while another third reported neither diagnosis, and the remaining third indicated either, anxiety or depression. Intriguingly, these findings did not align with responses from the previous question concerning the impact of autoinflammatory disease on mental health. While 16 out of 17 participants reported that their autoinflammatory disease affected their mental health to a severity of at least 3/5 on the rating scale, only 11 out of the 17 participants reported concurrent mental health diagnoses of anxiety and/or depression. While the cause of this discrepancy remains unclear, it indicates that mental health is underrecognised, resulting in under diagnosis and under treatment. Given the impact of autoinflammatory diseases on mental well-being enhancing disease awareness and understanding should also encompass improved integration of mental health treatment. Participants were then asked about how their autoinflammatory disease impacts their medication adherence and usage on a 1-5 scale with 1 being no impact and 5 being severe impact. Five participants (29.4%) answered 1 for the question while six (35.3%) answered 3. The rest of the responses were scattered with 2 having the next most responses at 3 (17.6%). The responses are surprising in how few participants answered 1, so the question could have been worded poorly where the participants weren't fully sure what was being asked. Due to the question being asked in non-layman's terms, the question then arises if the question was not completely understood due to the use of the term "Medication Adherence." The researchers came to the conclusion that based on the way the question was worded; this had a large impact on the reliability of the question. In the future, the research team will go to greater lengths to screen questions, and word them in a way that is of universal understanding to those not in the healthcare field, as we all are, in order to increase comprehension and accessibility when answering the assessment. This question in particular yielded surprising results, as half of respondents answered that they feel they are always taking too little, or too much medication in order to treat their disease. One outlier responded never to this question. The next question asked participants to rate on the same 1-5 scale how daily pain impacts their quality of life an astonishing seven (41.2%) participants responded with a 5, and the next highest response was six (35.5%) people responding with a 4. This is not surprising considering the severe and painful side effects of Yao's syndrome. These results contradict the previous question. It was surprising how many people didn't believe their disease affected their medication adherence and usage where there could be larger implications of how people may not be receiving the pain medication they need. Of course, again, it's important to note that the previous question could have been worded poorly, which could have explained the contradictory results. Pain was assessed again in the next question. Participants were asked to rank their daily pain with an autoinflammatory disease on a scale from 1-10 with 1 being minimal pain and 10 being extreme pain. Six people (35.5%) responded with a 7 and five people (29.4%) responded with an 8. These results further clarify the previous question because the participants were able to quantify the daily pain they experience and how it affects their quality of life. These people are in significant pain for most of their lives, and that affects how they are able to live their lives. People were then asked about if they ever worry about taking too much or too little medication to treat symptoms instead of the disease. The results were split fairly evenly with eight people (47.1%) saying that they often worry and eight people saying they sometimes worry. It is not known which side participants were leaning towards (either too little or too much), so this could be something that could be assessed in future research. What is important to note however is that a majority of participants answered that they do worry in some manner about their medication usage taking too much medication can be worrisome because the side effects of being on too many medications can negatively harm a person's health or the person may become addicted depending on the medication they take. On the other hand, taking too little medication can be harmful as well because the person would not be treating their pain symptoms. They would be in constant pain daily, and that could have negative consequences on their social and professional life. The next question connects with the previous question concerning the implications of taking too much or too little medication. People were asked about if they ever worry about job security due to their inflammatory disease causing them to miss work they were asked to respond on a scale from 1-5 with 1 being no impact and 5 being severe impact. Over half of the respondents (58.8% or 10 people) answered with a 5. These results show that many people who have this disease are negatively affected by it in terms of job security. They worry about losing their job due to factors such as immense pain or sudden flares to add onto this point, their worries about taking too much or too little medication could also factor into their worries about retaining their job. If they take too much medication, they may not be able to work properly due to side effects of such as feeling unfocused. Then, if they take too little medication, they wouldn't be able to work because of immense pain they're in. There are many factors that can affect how someone worries about various aspects of their life, and these results show that job security is one of those aspects. Many also fear that during flares, they will deal with brain fog, poor performance at work, and poor attendance due to the negative impact of their

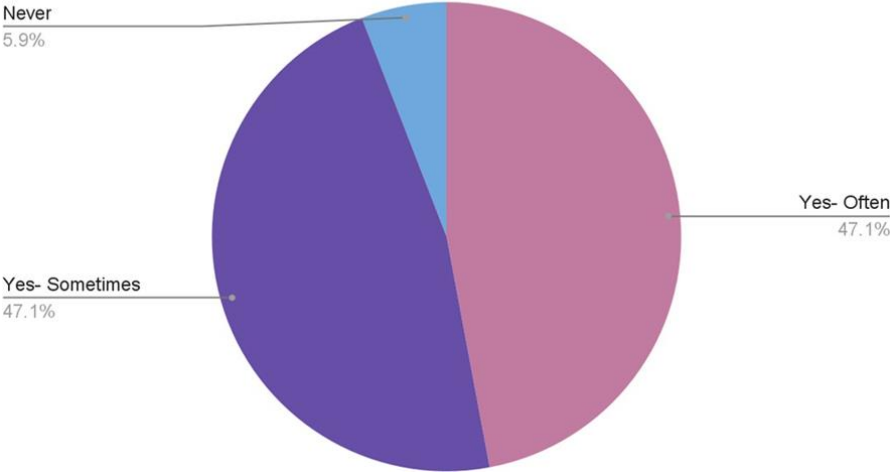
health on their occupation. Even when patients are able to attend work, oftentimes they have a fear of underperforming due to the physical limitations of the disease they suffer from. As this type of disease is newly classified, and rare, with not a lot of research on the subject, often those who suffer are misunderstood and suffer in silence. In further analyzing the following question, “Do you ever worry about job security due to your autoinflammatory disease causing you to miss work, on a scale of 1-5, with 1 being no impact and 5 being severe impact?” 10 respondents shared that they would rate their employment as minimally impacted, further shedding light on the disparities that many with disabilities face on a daily basis when it comes to the topic of financial stability and job security. The next question at hand aimed to discuss the feelings of hopelessness that many with autoinflammatory diseases, specifically NOD2 specific mutations, such as Yao’s syndrome face. Patients were asked to rate their sense of hopelessness experienced in correlation with this type of systemic diseases. On a scale of 1 to 5, with 5 being the most severe impact, 15 respondents gave a response of 3-5 in severity. 29% of respondents shared a score of 5, heavily implicating Yao’s syndrome as a disease that is not well understood, and that the support needed for patients suffering is often not there, leaving in its absence a feeling of severe hopelessness. In asking about implications of the NOD2 related gene mutation autoinflammatory syndromes, and the impact of the pain on mental health, the assessment revealed that as pain worsens, so does the mental health of 15/17 patients. The intense amount of pain felt daily by patients with this type of rare disease impacts not only physical health, but has a positive correlative relationship with their mental health status as well. As physical pain worsens, so does mental health. Likewise, on days when pain is not as severe, mental health is not as drastically impacted in a negative manner. The final question on the assessment poses a response on the support felt by those experiencing this type if condition. Out of 17 terms of others being able to understand what they are going through. 5 other respondents shared that they feel adequately supported by their family and friends. 3 respondents shared that they gain adequate support from online support groups. 2 respondents gain the support needed from their health care providers (Rheumatologists). Rheumatologists are leading specialist type that primarily support and treat those with type of disease; through the patients see many other specialists as well for symptom management, as this is a disease that impacts the entire body. One respondent shared that they gain the needed support from a therapist. One outlier did not answer the question.

**Methodology:**

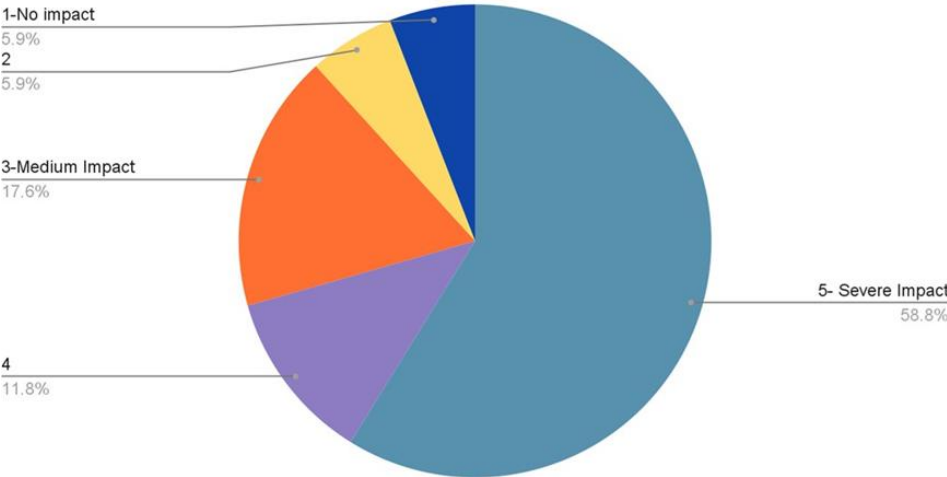
The BHIADA was a qualitative study in which patients with Yaos’s Syndrome (NOD2 autoinflammatory disease) actively chose to participate in the survey shared with them. The participation in this study was not compensation based. The survey was based on a Likert Scale with scoring from 1-5 in all areas, except for the area of pain score, which went to 10 with one being the least impact, and 5 being the greatest of impacts. Figures



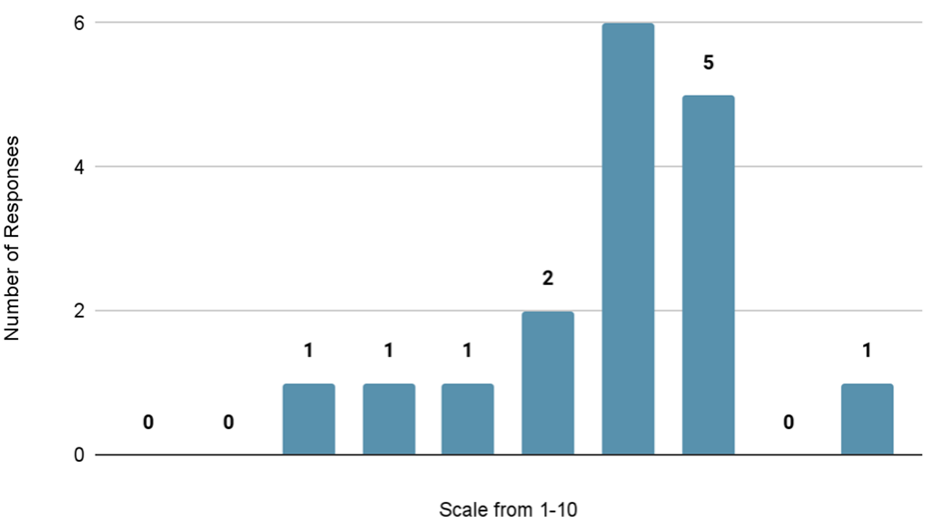
Do you worry about taking too much medication of too little?



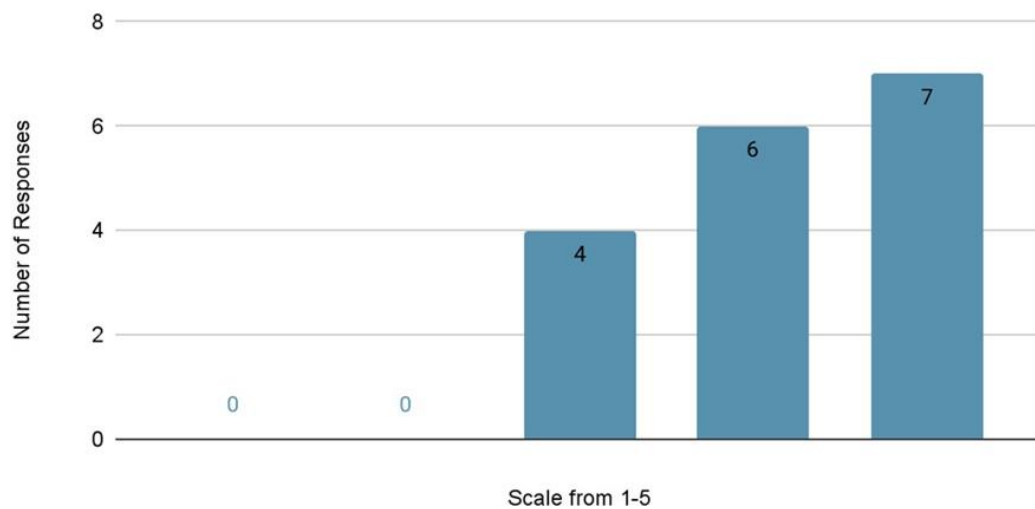
Do you ever worry about job security due to your autoinflammatory disease causing you to miss work?



Ranking of Daily Pain with an Autoinflammatory Disease



## Severity of Impact of Autoinflammatory Disease on Quality of Life



### Conclusion:

In conclusion, Yao's syndrome and other autoinflammatory syndrome and diseases are rare, and rarely researched due to the small number of individuals in the population impacted by these diseases. As the research has stated, this type of syndrome not only impacts the physical health of those impacted on a daily basis, but their mental and behavioral health as well. Many are left feeling not only in pain, but also under-supported and hopeless. Due to the rare nature of this disease, many go half of their lives in pain before being diagnosed, as there are very few specialists in the world equipped with the knowledge and training to be aware of this type of genetic abnormality, let alone to diagnose it. In shedding light on the behavioral health impact of autoinflammatory diseases like Yao's syndrome, it is our hope to spread awareness and broaden the research done in order to serve this underserved and rate community of patients.

### REFERENCES

Our team would like to thank all the people fighting this rare disease who gave of themselves, in both time and input, in order to further our research and give back to those struggling with Yao's Syndrome.

### References

A. Web document (Yao syndrome: MedlinePlus Genetics. (n.d.)). Medlineplus.gov. Retrieved October 18, 2023

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- Abstract
- Introduction
- Research Methodology
- Results and Discussions

### Conclusion

References (Harvard Referencing Style)

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Best regards,

**Dr. Pooja M. Patil**

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South Asian Journal of Management Research (SAJMR), ISSN : ISSN-0974-763X

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