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The Department of Accountancy in proud to present, with great pleasure, the first issue of the first volume of its student journal, Journal of SACFIRE. This journal provides outcomes in multidisciplinary nature research in Accounting and Finance. In performing this task, we had to take the assistance and guide of many respected persons, who deserve our greatest gratitude. Firstly, we would like to offer our sincere gratitude to Senior Professor Udith K. Jayasinghe, the Vice-chancellor of the Wayamba University of Sri Lanka, for his enthusiasm, guidance, and valuable comments. We would also like to extend our immense gratitude to Professor S.K. Gamage, the Dean of the Faculty of Business Studies and Finance of the Wayamba University of Sri Lanka and Professor D.A.M Perera, the Head of the Department of Accountancy, Faculty of Business Studies and Finance of the Wayamba University of Sri Lanka for their continuous support and guidance for the success of this journal.

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IMPACT OF TECHNOLOGY READINESS, INTERNET SELF-EFFICACY, AND COMPUTING EXPERIENCE ON EMPLOYABILITY AMONG PROFESSIONAL ACCOUNTING STUDENTS

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ABSTRACT

The purpose of this study is to assess the state of Information Technology (IT) readiness among accounting students and see if their knowledge, awareness, and experience with IT and computer skills impact their employment. The study was conducted using the deductive research approach and applied the quantitative mono method to test the grounded theory. A duly designed structured questionnaire focused on collecting cross-sectional data from selected accounting students on a timely basis. Based on 500 respondents, the research analysed whether Technology Readiness (TR), Internet Self-Efficacy (IS), and Computing Experience (CE) have any impact on the employability of professional accounting students. The preliminary observations indicated that professional accounting students were neither extremely techno-ready nor very techno-resistant. Overall, the respondents had a modest level of internet self-efficacy and computing experience. The study used an Ordinary Least Square (OLS) regression model to assess the relationship between the variables. Thus, the findings revealed that TR, IS, and CE significantly impact the employability of accounting students. Therefore, the findings of this study recommended integrating IT into the accounting education system. Thereby, accounting lecturers must be inventive in their teaching and assessment methodologies. Further, the model suggested that there can be many other variables impacting determining these candidates' employability. Thus, further research was recommended to further elevate the employability of accounting students.

Keywords: Accounting Students, Computing Experience, Employability, Internet Self-efficacy, Technology Readiness.

1. INTRODUCTION

Information technology is a predominant fact that led to significant advancements in the business world, particularly in accounting and finance (Ghasemi et al., 2011). Even though organizations experience internal and external pressures for change, a systematic process implementation could effectively manage the resistance to change. Thus, the continuous changes in the organizational setup will question the skills of the existing workforce besides emphasizing the reinforcement of a new strategy (Jalagat, 2016).

The integration of Information Technology (IT) caused significant alterations in the accountant's role (Ghasemi et al., 2011). Therefore, an increase in the intensity of being equipped with IT skills and IT information is critical among accounting

students while embracing the accounting profession (Azra, 2011). Eventually, the studies observed the growing demand for technology competencies among accounting professionals (Jalagat, 2016; Ghasemi et al., 2011). As a result, there is a key concern about whether the awareness of information technology impacts the employability of accounting students. Thus, the current study focused on evaluating the impact of technology readiness, internet self-efficacy, and computing experience on the employability of accounting students in Sri Lanka.

IT conquers the double-entry system by squeezing the accountant's role merely into monitoring a system and making decisions based on the summarized data available in an accounting system (Ghasemi et al., 2011). Consequently, technological preparedness (Bailey & Heck, 2002), may have an impact on the level of performance in the accountant's job. Despite this, willingness and enthusiasm to apply IT expertise within their professional position are referred to as technological readiness (Jalagat, 2016). Accountants with IT readiness could ensure an improvement in transparency and higher process efficiency (Padhi & Mohapatra, 2011).

Lai (2008) revealed that the IT skills among professional accounting students are scant. Thus, inadequate technical skills could cause a reduction in the career opportunities available in booming industries. Thereby, many studies examined the interaction of accounting students on E-learning and information technology (Ghasemi et al., 2011; Hu and Kuh, 2001; Lai and Moi, 2007; Lai, 2008). In contrast, limited studies examined the IT interaction of accounting students within developing nations (Lai and Moi, 2007; Lai, 2008). Since there are fewer studies examining the state of technology readiness, internet self-efficacy, and computing experience on career prospects of professional accounting students in Sri Lanka, we address this gap within this study while questioning "how significant technology readiness, internet self-efficacy, and computing experience skills are for employability among professional accounting students in Sri Lanka?"

2. LITERATURE REVIEW

Employability is one of the key pillars in an economy that identifies as an "investment in human capital and strategies for lifelong learning" (McQuaid & Lindsay, 2005). Employers are concerned about the new skills in workplace recruitment. Thus, Jackling and Natoli (2015) highlighted that fresh accounting graduates lack the skills such as team working, the capacity to handle unfamiliar problems, and communication skills. Whereas Ismail et al. (2020) found that information technology skills, personal skills, and interpersonal skills are the most significant skills sought by employers. Thus, Waddock (2005); Albrecht and Sack (2000) argued that the current accounting education is less capable of developing versatile accountants inline with the industry requirements. Parallelly, a study suggests developing accounting curriculums with more technological content and generic skills (Ismail et al., 2020).

A mix of positive and negative perceptions about technology exists in the domain of technology readiness (Wu and Wang, 2005; Summak et al., 2010; Alkhaffaf et al., 2018; Thottoli, 2020). Technology readiness is defined as "*people's propensity to*

embrace and use new technologies for accomplishing goals in home life and at work" (Parasuraman, 2000, p. 308). A study concluded that the beliefs among people about technology might vary from positive and negative. Accordingly, based on technical readiness, individuals have been categorized into explorers, pioneers, sceptics, delusional disorders, and lazy (Lai, 2008). Albeit, young consumers' cognitive and affective evaluations of new technologies are largely influenced by their technology readiness (Ferreira et al., 2014).

A study proposed to assess technology readiness by using the propensity to grip and apply new technology to achieve daily tasks at work or home, whereas the duly developed index contains optimism, innovativeness, discomfort, and insecurity (Parasuraman, 2000). Optimism and innovativeness are the two contributors that improve technology readiness among individuals, while discomfort and insecurity are the suppressing factors (Parasuraman and Colby, 2001). As per Lai (2008), these elements can affect the IT competency of individuals.

Thus, Lee et al. (2003) stated that the Technology Acceptance Model (TAM) developed by F.D. Davis in 1989 has continued to advance during past decades. Wu and Wang (2005) found that perceived risk, cost, compatibility, and perceived usefulness are the significant variables that impact the behavioural intention to use IT. Thus, they have recommended revising TAM based on these variables.

A study on primary school teachers in Turkey revealed that teachers are not at a high level of technical readiness (Summak et al., 2010). Nevertheless, American students are more likely to use new technologies than Chinese students (Elliott et al., 2008). Thus, it was found that technology readiness is s significant factor in evaluating the cognitive and emotional status of consumers regarding new technology (Ferreira et al., 2014).

Alkhaffaf et al. (2018) found that having higher technology readiness among accountants could increase their competencies in using technology. Further, they revealed that the technology readiness of Iraqi accountants impacts their IT skills. Thus, it was recommended to motivate accountants to improve their technological readiness. Thottoli (2020) stated that the Oman higher education system inculcates adequate theoretical and practical training in general accounting software. Thus, accounting students with high technology readiness are highly motivated and fearless, yet students who loathe technology should be convinced about the benefits (Lai, 2008; Parasuraman and Colby, 2001). Parallelly, Ghasemi et al. (2011) confirmed that using information technology in accounting could increase functionality, accuracy, fast processing, and better external reporting. Accordingly, we hypothesised a positively significant relationship between technology readiness and the employability of professional accounting students.

H_{1a}: Technology readiness has a significant positive impact on the employability of professional accounting students

Meanwhile, Self-efficacy is defined as "*an individual's judgments of his or her capabilities to perform given actions*" (Schunk, 1991, p. 207). Thus, self-efficacy beliefs have been a major factor in understanding the frequency and success when

individuals use computers (Cassidy & Eachus, 2002). Torkzadeh and Koufteros (1994) found that students who follow computer training courses have significantly increased levels of computer self-efficacy. Cassidy and Eachus (2002) discovered a significant positive link between computer self-esteem and computer experience, and computer software package proficiency and computer-to-computer instruction. Further, they revealed that computer experience, awareness of computer software packages, owning a computer and computer training are some significant factors that increase computer self-efficacy. Besides, a study confirmed a link between student views and self-efficacy about the internet (Wu and Tsai, 2006). The same study reveals that male students had more self-efficacy on the internet than females. Thus, their attitude toward the internet was strongly linked to their internet self-efficacy.

A study revealed that increased internet self-efficacy could improve students' behavioural, procedural, and metacognitive strategies for finding information in a web-based environment and facilitate their learning in web-based environments (Tsai & Tsai, 2003). It was confirmed that internet attitude was highly correlated with the students' internet self-efficacy in Taiwan (Wu & Tsai, 2006). Lai and Ahamad Nawawi (2010) highlighted the importance of integrating IT in an innovative way for teaching and learning. Thus, Lai (2008) found a moderate level of internet self-efficacy among professional accounting students in Malaysia. Conversely, higher self-efficacy could severely distract individuals when attempting tasks (Hassall et al., 2013). Based on the literature, we derived the hypotheses to explain the relationship between internet self-efficacy and employability of professional accounting students as,

H_{1b}: Internet self-efficacy has a significant positive impact on the employability of professional accounting students

As per Hu and Kuh (2001), a technology-oriented workplace could increase the information technology competencies of its workers. A study based in the USA revealed that word processing and spreadsheet software skills are top-tier technology skills for new accounting recruits (Marriott et al., 2004). On the other hand, communication skills and critical thinking abilities were some important soft skills sought by the industry (Burnett, 2003). However, Elsaadani (2015) pointed out the significance of literacy of the internet, email, and commercial accounting software for accounting professionals.

Lai (2008) revealed that most accounting students are experts in Microsoft packages yet less competent in accounting software and statistical packages. Nevertheless, the knowledge and use of accounting software packages are significantly and positively related (Thottoli, 2020). Alkhaffaf et al. (2018) stated an increasing trend in using IT by accountants in their workplace. Further, the amount of cabling on campus was positively associated with students' use of computing and information technology. In contrast, the computing experience does not create any negative impact on student engagement of the best practices like student-faculty communication, student cooperation, and active learning (Hu & Kuh, 2001). Thus, we developed the hypothesis to explain the relationship between computing experience and the employability of accounting students as,

H_{1c}: Computing experience has a significant positive impact on the employability of professional accounting students

Collectively, the literature review supported that many studies have pointed out the significance of information technology in the accountants' profession. However, with the advancement of IT and globalization, the preparedness of future accountants has not yet been properly addressed. Though studies such as Alkhaffaf et al. (2018); Lai and Moi (2007); Lai (2008) addressed the IT skills and career prospects of accounting students in different contexts, there is still a gap remaining within the Sri Lankan context to understand how significant technology readiness, internet self-efficacy, and computing experience skills on career development among professional accounting students.

3. RESEARCH METHODOLOGY

While following the positivism philosophy, the study generated hypotheses using existing literature. Thereby, the researchers applied the deductive research approach and directed the data analysis to test the hypothesis. So, the study followed quantitative research methods to collect and analyse data accordingly. The study used the mono-research method and collected cross-sectional data based on a structured questionnaire to quantify the variables addressed in the below conceptual diagram.

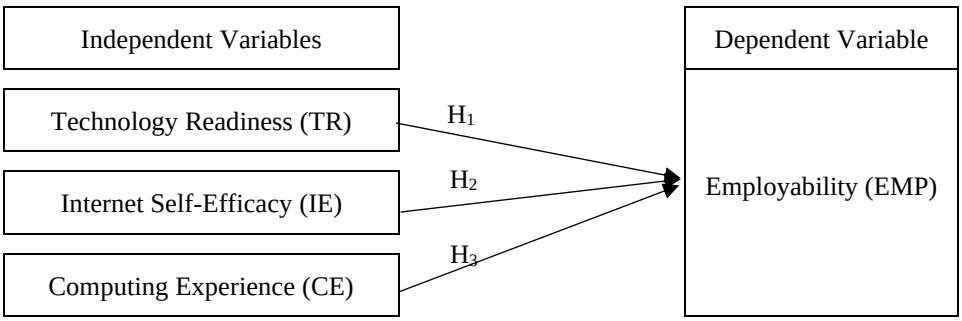

Figure 1: Conceptual Diagram

The population of the study is the total professional accounting students in Sri Lanka. Thus, the size of the population is unknown. Thereby, Morgan's table suggested a sample size of 385 respondents (Krejcie and Morgan, 1970). Based on the convenient sampling technique, we distributed the duly developed questionnaires among professional accounting students. Due to the COVID-19 pandemic situation within the country, we collected the primary data using a google questionnaire. There were 500 responses, and we considered all responses for analysis (n=500).

We intended to derive a regression model explaining the statistical relationship between the three predictor variables and the response variable. The proposed Ordinary Least Square (OLS model is as follows.

$$EMP = \alpha + \beta_1 TR + \beta_2 IE + \beta_3 CE + \varepsilon$$

Where EMP (Employability) is the response variable, α is the constant, $\beta_{1,2,3}$ are the coefficients of the predictor variables TR (Technology Readiness), IE (Internet Self-Efficacy), and CE (Computing Experience), respectively. At the same time, ε is the error term of the model.

Accordingly, the below hypotheses were developed.

H_{1a}: Technology readiness has a significant positive impact on the employability of professional accounting students

H_{1b}: Internet self-efficacy has a significant positive impact on the employability of professional accounting students

H_{1c}: Computing experience has a significant positive impact on the employability of professional accounting students

4. DATA ANALYSIS

Demographic Characteristics of the Sample

Table 1: The Respondents' Profiles

Demographic Characteristics		Frequency	Percentage (%)
Gender	Male	210	42
	Female	290	58
Age	20-24 years	227	46
	25- 29 years	182	36
	30-34 years	45	9
	35 and above	46	9
Employment Status	Permanent	155	31
	Temporary	102	20
	Not Employment	243	49

Table 1 shows the profiles of the respondents. There are 58% of female respondents, while 42% of males. Thus, the majority of the respondents are between the age of 20-24. Moreover, half of the respondents (49%) are unemployed, with the remainder working as permanent (31%) or temporary (20%) employees. This data highlights that most of the young respondents of this research are job seekers.

Measuring the Reliability of the Questions - Cronbach's Alpha Test

Data accuracy refers to the records that are free from errors and can be relied upon as a source of data (Mcginley et al., 2003). The accuracy of data sets was determined using reliability testing. We used Cronbach's Alpha statistic to measure the reliability of the variables. We assumed that the questions are only measuring one latent variable.

Accordingly, the Cronbach's Alpha statistic in Table 2 explains a good level of internal consistency among the questions used to test the variables (*Alpha Value > 0.8*).

Table 2: Reliability Statistics -Cronbach's Alpha

Variable	Reliability Statistics	
	Cronbach's Alpha	Number of Items
Technology Readiness	0.868	5
Internet Self-Efficacy	0.812	5
Computing Experience	0.859	5
Employability	0.875	5

Measuring the Adequacy of the Sample Size and Correlation in Data - Kaiser-Meyer-Olkin Statistic

The statistic of KMO (Kaiser-Meyer-Olkin) measures the sampling adequacy of each variable in the model. As per Table 3, the KMO statistic is 0.940, indicating an adequate sample size to conduct the study. Bartlett's Test of Sphericity indicated that the correlation matrix of the variables is not an identity matrix ($P=0.000 < 0.05$) which confirms a substantial correlation between the independent variables.

Table 3: Reliability Statistics - KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.940
Bartlett's Test of Sphericity	Approx. Chi-Square	4029.174
	Df	105
	Sig.	0.000

Covariance and Correlations between Variables

The covariance results indicate that an increment of technology readiness in one unit could make a 0.3016 increment in the employability of professional accounting students. Meanwhile, the internet self-efficacy increase in one unit will result in increasing of 0.2671 times employability. Having experience in computing also will cause to increase employability by 0.2945 times.

The correlation coefficient matrix explains a modest linear relationship between the dependent and independent variables. Further, it reveals a positive and statistically significant relationship between the TR, IE, CE, and EMP ($r = 0.6503$, $p<0.05$; $r = 0.5866$, $p<0.05$; $r = 0.6444$, $p<0.05$, respectively in between EMP and TR, EMP and IE, EMP and CE).

Regression Model

The regression model results (Table 4) explain that the increase in technology readiness by could cause to increase in the employability of the professional accounting students. Also, the results confirm a positive relationship between internet self-efficacy, computing experience and employability. However, a higher α (0.8490) and adjusted R-squared to 0.4882 suggests that there can be many other unobserved variables impacting the employability of professional accounting students.

According to the results of the regression analysis can be developed the regression model as follows.

$$EMP = 0.8490 + 0.3359\,TR + 0.1288\,IE + 0.3161\,CE + \varepsilon$$

Table 4: OLS Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TR	0.3359	0.0510	6.5857	0.0000
IE	0.1288	0.0511	2.5210	0.0120
CE	0.3161	0.0521	6.0665	0.0000
C	0.8490	0.1124	7.5525	0.0000
R-squared	0.4918	Mean dependent variable		3.2536
Adjusted R-squared	0.4887	S.D. dependent variable		0.6828
S.E. of regression	0.4882	Akaike info criterion		1.4119
Sum squared residual	118.2354	Schwarz criterion		1.4457
Log-likelihood	-348.9866	Hannan-Quinn criteria		1.4252
F-statistic	159.9816	Durbin-Watson stat		1.8595
Prob(F-statistic)	0.0000			

Testing the Hypotheses

The P-values of the predictor variables in table 4 explains that the predictor variables; technology readiness, internet self-efficacy, and computing experience have a significant and positive relationship with the employability of professional accounting students [*P (0.000) < 0.05, P (0.012) < 0.05, P (0.000) < 0.05 respectively*]. Thus, the P-value of the F statistic confirms that the overall model is also significant [*P (0.000) <0.05*].

Testing the Residuals of the Model

To confirm the validity of the regression model, we further evaluated the distribution of the residuals and confirmed that the model is free from spurious effects. We used the Breusch-Pagan-Godfrey Heteroscedasticity Test, Breusch-Godfrey Serial Correlation LM Test, and Jarque-Bera statistic for residuals to test the homogeneity, serial correlation, and normal distribution of residuals, respectively.

The results of the Breusch-Pagan-Godfrey Heteroscedasticity Test accept the alternative hypothesis [P-value of F statistic (0.011) < 0.05 and P-value of Chi-Square statistic (0.0112) < 0.05] and confirm that the residuals are heteroskedastic. Inline, the Breusch-Godfrey Serial Correlation LM Test confirms that there is a serial connection between the residuals in the model [P-value of F Statistic (0.0191) < 0.05 and P-value of Chi-Square statistic (0.0188) < 0.05]. The P-value of the Jarque-Bera statistic of the residuals series confirms a non-normal distribution. Since the study focused on the aspects of individual behaviour, the fluctuations between the responses from person to person can be experienced. Thereby, further studies can be conducted to enhance the predictability of the model proposed in this study

5. RESULTS, DISCUSSION AND CONCLUSION

This study aimed to determine the impact of technology readiness, internet self-efficacy, and computing experience on career development among professional accounting students in Sri Lanka. Based on the empirical findings, we developed three alternative hypotheses and tested them by analysing the duly collected data.

The current dynamic working environment seeks potential and a skilled labour force to achieve business goals in a complex structure. Thereby, possessing an adequate IT skills level will be an advantage for current and future job seekers. Albeit, prior studies (Lai, 2008) identified a scarcity of IT skills among professional accounting students. Thus, the findings of this study convinced the significance of technology readiness, internet self-efficacy, and computing experience for professional accounting students to be eligible for employment.

H_{1a}: Technology readiness has a significant positive impact on the employability of professional accounting students

Findings concluded that technology readiness has a positive and moderate level of correlation with employability, and the relationship between technology readiness and the employability of professional accounting students was significant according to the regression analysis. These results further emphasize the findings of Alkhaffaf et al. (2018), which explain a positive link between Iraqi accountants' technological readiness and IT skills. Lai (2008) confirms that students with high technology readiness are highly motivated and fearless, whereas technology laggards must be forced to use new technology (Parasuraman and Colby, 2001).

H_{1b}: Internet self-efficacy has a significant positive impact on the employability of professional accounting students

The study confirms a significant and positive connection between internet self-efficacy and student employability. Thus, the results further confirm a moderate correlation between internet self-efficacy and employability. Meanwhile, these findings comply with Lai (2008), revealing a moderate relationship between the variables.

H_{1c}: Computing experience has a significant positive impact on the employability of professional accounting students

We discovered a positive and significant association between computing experience and employability, and this link is noteworthy since there is a moderate level of correlation between the variables. According to Hu and Kuh (2001), the investment in cabling on campus is favourably associated with students' use of computing and information technology, while the impact sizes were often minor. Lai (2008) identified a competency gap between Microsoft office packages and accounting software packages. The study emphasizes the lack of practical training and the necessity of incorporating accounting software packages into the curriculums.

Overall, based on the perspective of professional accounting students, the survey found that IT in the means of technology readiness, internet self-efficacy, and computing experience are some of the significant factors that determine career opportunities. Thus, we would like to draw the attention of educators. It is time to incorporate a sufficient level of IT education through the curriculums of professional accounting courses and higher educational opportunities. Besides, assuming that students will obtain necessary skills elsewhere undoubtedly impacts their employability, thus questioning the validity of professional accounting courses.

Therefore, integrating more IT into professional education will develop more compatible professional accountants to cater to future industry needs.

However, the model suggested that there can be many other factors impacting the employability of professional accounting students. Thus, we recommend further studies to explore those variables to enhance the students' professional accounting education and employability. Meanwhile, we recommend focusing on a larger sample for the same study to enhance the model's predictability.

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DETERMINANTS OF THE QUALITY OF FINANCIAL AUDITS: EVIDENCE FROM A FRONTIER MARKET

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ABSTRACT

This study investigated the determinants of the quality of financial audits of listed companies in Sri Lanka, a frontier market. Among the 282 publicly traded firms on the Colombo Stock Exchange, a sample of 50 companies covering a wide range of industries was selected for data collection from 2016 to 2020 (250 observations). Referring to previous literature, audit firm size, audit fee, audit rotation, and audit tenure were selected as the independent proxies, while the dependent variable was audit opinion. Correlation analysis revealed no evidence of multicollinearity between variables. Due to the dichotomous nature of the audit opinion, binary logistic regression was used to evaluate the data. The results revealed that audit firm size and audit fee significantly affect the audit opinion, whereas audit rotation and tenure have an insignificant effect. According to the findings, the involvement of the Big Four in financial audits was a key component in improving audit quality. In addition, increasing audit costs improved the quality of financial audits. In certain cases, this may be attributable to the fact that the more fees an audit firm charges, the more time and effort its partners and other skilled senior auditors devote to it. Furthermore, this study established that the mandated practice of rotating the auditor every five years and the auditor rotation in the current year have no impact on the audit quality. Future studies into audit quality were urged to consider the characteristics of the business and the role of management in enhancing the literature.

***Keywords:* Audit Fees, Audit Quality, Auditor Rotation, Audit Firm Size, Audit Tenure**

1. INTRODUCTION

Economic decisions in the modern global economy are based on financial information. Therefore, financial audit processes have the primary role of enhancing the credibility of financial statements by providing stakeholders with credible information for their decision-making needs. Auditing is critical to the development and advancement of the global economy and commercial organizations and the creation of investor trust regarding corporations. The complexity of transactions that occur with globalization, economic growth, geographical changes, technological advancements, and perception changes of management, shareholders, and prospective investors have made auditors and the entire auditing process a vital requirement of the economy (Sulanjaku and Shingjergji, 2015). Therefore, auditors should express their opinions based on the fairness and accuracy of firms' financial statements. This is essential for the users of financial statements to ensure that the

financial statements are prepared in accordance with the relevant financial reporting framework. Accordingly, auditing would increase the credibility of financial statements, ensuring those are free of material misstatements.

Diverse perspectives of different stakeholders on what constitutes audit quality may impact the indicators used to measure audit quality. Financial report users may think that high audit quality equates to the absence of substantial misstatements. The auditor may define high audit quality as satisfactorily accomplishing all audit tasks needed by the firm's audit methodology. The audit company may define a high-quality audit as one for which the work may be justified in an inspection or court of law. In the eyes of regulators, a high-quality audit may adhere to professional standards. Finally, society may see a high-quality audit as one that averts economic difficulties for a business or market. Accordingly, diverse perspectives offer divergent measurements (Knechel et al., 2013).

Even though numerous research has been conducted on the quality of financial audits, there is no general definition or conclusion because audit quality is a complex and multifaceted concept. According to De Angelo (1981), audit quality means the auditor detects breaches in the client's accounting system and reports those breaches. Accordingly, two aspects are highlighted by De Angelo (1981): the likelihood that an auditor identifies existing misstatements and takes appropriate action in response to the finding. The auditor's expertise and effort are linked to the first component, while the auditor's objectivity, professional skepticism, and independence are linked to the second. These two components also imply that various parts of the audit might impact overall audit quality (Knechel et al., 2013).

Nowadays, many accounting firms are accused of conducting substandard audits that fail to recognize the major risk involved. Therefore, the audit of financial statements raises the question of whether the audit is capable enough to ensure the accountability of shareholders' fund management. Accordingly, the need for the quality of audit has become increasingly important nowadays, and there is a need to study the determinants of audit quality. Moreover, numerous researchers have studied the determinants that affect the quality of financial audits in different contexts and found different results (Hai, 2016; Salehi et al., 2019; Mawutor et al., 2019; Hetagan, 2019; Sulanjaku and Shingjergji, 2015; Feng, 2020). Much of this research has been conducted in Western and American countries, while some research is available in African and Asian countries. However, in Sri Lanka, not much focus is given to the determinants of the quality of financial audits. Therefore, it is imperative to study what determinants affect the quality of audits in the Sri Lankan context to fill this gap.

Our study will be conducted with the objectives of identifying the determinants of financial audit quality and investigating the extent to which those determinants affect the quality of financial audits of listed companies in the Colombo Stock Exchange (CSE) of Sri Lanka, a frontier market. The study's findings are vital since audit quality causes achieve efficient and effective resources management while improving corporate performance. It is more important than ever for shareholders to know if their investments are in a secure or risky scenario. Moreover, accurate, reliable, and

quality information is essential for a well-functioning financial market. Accordingly, this study serves different stakeholders in different aspects.

The remainder of this paper is organized as follows; section two discusses the literature related to audit quality, section three describes the methodology, and section four presents the results and analysis. Finally, section five offers the conclusion of the study.

2. LITERATURE REVIEW

Theoretical Review

The auditing process can be defined as a monitoring mechanism that gives an assurance to stakeholders of the company by certifying that the company's financial statements provide a true and fair view of financial information. Agency theory, policeman theory, and credibility theory justify the audit quality cause to reduce information asymmetry among related parties.

Agency theory

Jensen and Meckling (1976) put forward the agency theory of corporate governance. Agency theory revolves around information asymmetry between the principal (shareholder) of a company and the agent (management) of the company. As a result of the separation of ownership from control in modern business organizations, the agent misuses the economic resources assigned to him by the principal. Then there is an information asymmetry between the principal and the agent, resulting in the agency problem. This problem affects the decisions of both parties resulting in the owners and managers needing some mechanism to solve this problem to make effective and correct decisions. To minimize information asymmetry related to agency relations, shareholders seek the services of high-quality external auditors to protect their interests. Jones (1991) explained that potential conflicts between managers and owners raise the need for audit service monitoring methods, which are crucial for different securities holders. Sometimes agents (whether they are directors or auditors) can be trusted without the need for auditing or other regulatory or oversight mechanisms. But as a whole, the audit and its quality can help reduce misstatements and reduce the problem of information asymmetry between the principal agents. And also, high quality can reduce the cost of misstatements of financial statements and is vital to restore confidence in the quality of a company's financial reporting and increasing the company's market valuation.

Policeman Theory

Limperg (1985) identifies the auditor as a police officer who focuses on mathematical accuracy and fraud prevention as well as identification. Until the 1940s, police theory was extensively reviewed by researchers as the guarded theory for auditing. In the early 20th century, according to the policeman theory, the duty of an auditor was to investigate, detect and prevent fraud in a company. Therefore, an auditor's ability to detect and prevent fraud depends solely on the mathematical accuracy of the financial data provided by the company's management. If the auditor finds that the audit client's financial statement is materially misstated or fraudulent, they should issue a

disclaimer financial statement, enhancing the auditor's independence and quality. In addition, police theory could argue that there is a need for more robust monitoring, auditing, and exchange of information in an independent and responsive role, as citizens and stakeholders demand better services and more information.

Credibility Theory

This theory describes the primary function of auditing as adding credibility to financial statements. The theory of reliability is considered by auditors to be a fundamental theory used in auditing and contributes to improving audit performance, the credibility of financial statements, and the quality of audits. Therefore, according to this theory, audited financial statements are intended to improve the attitude of financial statement makers as well as increase the credibility of financial publishers to reduce the information asymmetry between users.

Empirical Review

Numerous research has been conducted on the factors that influence the quality of audits. However, due to the difficulties of explicitly evaluating audit quality, much research focuses on the perceived audit quality. Furthermore, there is no generally accepted definition because the audit is a complex and multifaceted concept. In this scenario, DeAngelo (1981) defined it as the probability that an auditor will detect and report violations of the client's accounting system regulations. Furthermore, DeAngelo (1981) concluded that the identification of distortion depends on the quality, volume of knowledge obtained, the capacity of the auditor, and the reporting of distortion depends on the auditor's motivation to reveal it.

The better the audit's perceived quality, the more clients and organizations, will pay a premium for financial statement auditing. As a result, businesses are ready to pay a premium to Big Four audit firms, and audit costs are viewed as an indicator of audit quality (Olabisi et al., 2020). According to Salehi and Mansoury (2009), the size of the audit company has been recognized as a factor affecting audit quality. He further emphasized that Deloitte, PricewaterhouseCoopers, Ernst and Young, and KPMG are often referred to as the "Big 4" and are regarded to have more financial resources than smaller audit companies to undertake high-quality audits. Similarly, Pham et al. (2017) concluded that Big 4 auditors in Vietnam provide high audit quality than non-Big four auditors. However, the results also showed that the higher the audit fees the auditors receive, the lower the quality of audit services provided. In another survey in Vietnam, Hai (2016) emphasized that organizational structure, the scope of service provided, ownership of the audit firm, internal quality controls, external quality controls, and audit fees have a positive impact on audit quality, whereas the governance of the audit profession gives a negative impact on financial audit quality.

Al-Khadash (2013) focused on identifying the critical factors affecting the audit quality in Jordanian commercial banks and revealed a positive impact of audit fees, audit firm size, audit firm's reputation, and auditor proficiency on the audit quality. Moreover, in a survey study, Yusoff et al. (2019) showed a positive and significant effect of audit tenure and audit firm size on audit quality. Moraes and Martinez (2015) found a positive relationship between audit fees and firm performance in Brazil.

Similarly, Mawutor et al. (2019) showed that the audit fee, audit committee, and audit firm size as the significant determinants of the audit quality of companies in Ghana.

Moreover, Belfagira (2015) examined factors influencing the quality of registered companies in Libya and found a significant impact of auditor independence and audit firm size on audit quality. In addition, this study noted a positive but insignificant relationship between audit fees and audit quality. In the Nigerian business environment, Enofe et al. (2013) concluded that audit quality is determined by the audit firm size, ownership structure, and board independence, whereas audit tenure is insignificant in determining the audit quality. Similarly, Aronmwan et al. (2012) investigated the link between audit tenure and audit quality and discovered a negative and negligible association. In a study conducted focusing on the public accounting firms in Jakarta, Calocha and Herwiyanti (2020) found that tenure negatively impacts audit quality, but it is not significant. In a similar study, Al-Thuneibat et al. (2010) observed a negative influence of audit tenure on audit quality while identifying an insignificant impact of audit firm size on audit quality.

Using the binary logistic regression model, Triani et al. (2019) examined the factors affecting the quality of financial audits of public listed companies on the Indonesia Stock Exchange. Their research discovered that while the size of the audit firm has a favourable effect on audit quality, audit tenure, leverage, and going concern opinion had a negative effect. Adeniyi and Mieseigha (2013) also discovered that audit tenure negatively correlates with audit quality. Furthermore, Salehi et al. (2019) investigated factors influencing audit quality in an emerging market. A meta-analysis method helped to find that audit firm size and audit specialization positively impact audit quality. On the other hand, their study indicated that audit tenure does not significantly influence the quality of audits. However, Senjaya and Firnanti (2017) found that audit quality was impacted by auditor tenure and accountability, while audit fees had no effect. However, Feng (2020) found that gender and audit engagement size positively affect financial audits' quality, while audit tenure negatively affects audit quality.

Sari et al. (2019) revealed that audit specialization and tenure are the determinants of audit quality, whereas audit fees, audit rotation, and accounting firm size do not affect audit quality. Similarly, Kalanjati et al. (2019) showed that auditor rotation is negatively associated with audit quality. Similarly, Mohaisen et al. (2019) found a significant negative relationship between audit firm rotation and audit quality in Iraq. Furthermore, Yuniarti (2011) found that firm size and audit fees do not significantly affect audit quality. From a different perspective, according to Hai (2016), the most important factors influencing the quality of audit activities were: the audit firm's organizational and operational structure, its prices and costs, its staff capacity, the scope of business services provided to audit clients, external quality control, and internal quality control; and the audit firm's private ownership.

The literature review reveals that though numerous studies have been conducted to investigate the drivers of the quality of audits in different contexts, there is a lack of studies that comprehensively investigate the factors that determine audit quality. Therefore, this study contributes to filling that gap while enhancing the literature.

3. METHODOLOGY

The population of this study comprised 283 companies listed in the CSE as of 31st December 25, 2021. With the aid of the convenient sampling technique, 50 listed companies were selected as the sample representing 20 industries. Data were collected from annual reports of the selected firms for a period of five years from 2016 to 2020 (250 observations).

Dependent, independent, and control variables were selected for the study, referring to the previous studies. Accordingly, the financial audit quality is considered the dependent variable proxied through the audit opinion. The audit opinion is a binary variable that takes one (1) for unqualified opinion and zero (0) for modified opinion. The first independent variable of the study is audit firm size (Al–Khadash, 2013; Pham et al., 2017; Salehi et al., 2019) which is indicated by a dummy variable that takes one (1) if the firm is audited by one of the big four audit firms and takes zero (0) otherwise. The second independent variable is the audit fee indicated by the logarithm of the audit fee (Al–Khadash, 2013; Moraes and Martinez, 2015; Hai, 2016).

Audit tenure (Enofe et al., 2013; Calocha and Herwiyanti, 2020) is the third independent variable measured using a dummy variable given one (1) if the auditor is not changed within a period of 5 years and otherwise takes zero (0). The fourth independent variable is auditor rotation (Sari et al., 2019; Kalanjati et al., 2019), measured by a dummy variable given one (1) if the auditor is changed in the current year and otherwise zero (0). Leverage, which is measured through the ratio of total liabilities to total assets, is considered the control variable of the study.

Binary logistic regression is employed to analyze the data since the audit opinion, which is the dependent variable, is a binary variable. Accordingly, Equation 01 is developed to examine the determinants of financial audit quality.

$$A.QLT_{it} = \alpha + \beta_1 A.FSZ._{it} + \beta_2 A.FEE_{it} + \beta_3 A.TNO_{it} + \beta_4 A.RTN_{it} + \beta_5 LEV_{it} + \varepsilon_{it}$$

Where; A.QLT is the audit quality, A.FSZ is the audit firm size, A.FEE is the audit fee, A.TNO is the audit tenure, A.RTN is the auditor rotation, LEV is the leverage, α is the intercept, $\beta_1 - \beta_5$ are the coefficients of variables, and ε_{it} is the error term.

The following hypotheses are posed in order to achieve the research objectives.

H1a: There is a significant impact of audit firm size on the audit quality

H1b: There is a significant impact of audit fees on the audit quality

H1c: There is a significant impact of audit tenure on audit quality.

H1d: There is a significant impact of auditor rotation on the audit quality

4. FINDINGS AND DISCUSSION

Descriptive Statistics

Table 01 shows the descriptive statistics, including the mean, standard deviation, maximum, and minimum values of the variables of the study.

Table 01: Descriptive Statistics

Continuous Variables					
Variable	**Obs**	**Mean**	**SD**	**Min**	**Max**
A.FEE	250	14.32	.990	11.70	16.49
LEV	250	.534	.289	.017	1.63

Dummy Variables			
Variable		**Frequency**	**Percentage**
A.QLT	(1): Unqualified Opinion	242	96.8
	(0): Qualified Opinion	08	3.2
A.FSZ	(1): Big Four Audit Firm	234	93.6
	(0): Not a Big Four Audit Firm	16	6.4
A.TNO	(1): Auditor is not changed within a period of 5 years	208	83.2
	(0): Auditor is changed within a period of 5 years	42	16.8
A.RTN	(1): Auditor is changed in the current year	12	4.8
	(0): Auditor is not changed during the current year	238	95.2

According to the summary statistics, 96.8 per cent of listed companies have received unmodified opinions, indicating that the financial statements are presented fairly in most cases. Furthermore, 93.6 per cent of companies prefer to choose an audit firm from the Big Four to audit their financial statements. Statistics imply that more than 83 per cent of publicly traded companies have not changed their auditors within the last five years, despite this being considered a best practice. Moreover, the auditor is not changed in the majority of companies (95.2%) during the current years throughout the sample period. In addition to that, the range of the audit fee paid by the listed companies varies between values of 11.70 to 16.49, and the average is 14.32, with a lower standard deviation of 0.99. The mean value of leverage (53.4%) indicates that the debt capital invests more than half per cent of the assets of the companies.

Correlation Analysis

Table 02 indicates the results of the correlation analysis. According to the analysis, audit firm size and audit fees have a significant positive relationship with audit quality, whereas auditor rotation and leverage have a significant negative relationship with audit quality. However, there is an insignificant relationship between audit tenure and audit quality. Furthermore, it is found that the correlation coefficients among variables are low, indicating that there are no multicollinearity issues among the variables selected for the study.

Table 02: Correlation Analysis

	A.QLT	A.FSZ	A.FEE	A.TNO	A.RTN	LEV
A.QLT	1					
A.FSZ	0.231***	1				
	0.000					
A.FEE	0.125**	0.022	1			
	0.047	0.734				
A.TNO	-0.039	-0.276***	0.148**	1		
	0.53	0.000	0.018			
A.RTN	-0.172*	-0.094	0.056	0.499***	1	
	0.065	0.138	0.382	0.000		
LEV	-0.192***	-0.117*	0.417***	0.163***	0.069	1
	0.002	0.065	0.000	0.009	0.279	

**** indicates significance at the 1% level, ** indicates significance at the 5% level, and * indicates significance at the 10% level*

Regression Analysis

The results of the binary logistic regression analysis are shown in Table 03. According to the regression analysis, the likelihood ratio chi-square of 33.13 (p-value < 0.01) indicates that the model as a whole fit significantly. McFadden's R-squared is 0.467, indicating that the model better predicts audit quality.

The results indicate a significant positive impact of audit firm size (4.143, p-value<0.05) on audit quality. Similarly, the audit fee (1.871, p-value<0.01) significantly positively impacts audit quality. However, audit tenure (18.378, p-value>0.05) has an insignificant positive impact on audit quality, while auditor rotation (-18.87, p-value>0.05) has an insignificant negative impact on audit quality. Furthermore, leverage (-5.97, p-value>0.01) has a significant negative impact on audit quality.

Table 03: Results of Regression Analysis

Variable	Coef. Value	z value	p-value
A.FSZ	4.143**	2.58	0.010
A.FEE	1.871***	2.68	0.007
A.TNO	18.378	0.01	0.994
A.RTN	-18.87	-0.01	0.993
LEV	-5.97***	-3.12	0.002
Con	-22.31	-2.35	0.019
Observations	250	LR chi2 (5)	33.13
McFadden R^2	0.467	Prob> chi2	0.000

**** indicates significance at the 1% level, ** indicates significance at the 5% level, and * indicates significance at the 10% level*

By considering the outcome of regression analysis, the regression equation for the study is developed as follows;

$$AQ = -22.31 + 4.143AFS + 1.871AF + 18.378AT - 18.87AR - 5.97LEV$$

According to the regression results, audit firm size positively and significantly affects financial audit quality. It implies that when companies appoint one of the Big Four audit firms as their auditor, the audit quality increases. It is in line with the findings of Al-Khadash (2013), Enofe et al. (2013), Belfagira (2015), Pham et al. (2017), Mawutor et al. (2019), and Salehi et al. (2019). Furthermore, the study findings indicate that the financial audit quality is positively and significantly affected by the audit fee. This finding is consistent with the findings of Al-Khadash (2013), Moraes and Martinez (2015), Hai (2016), and Mawutor et al. (2019). It infers that the higher the audit fee higher the audit quality. Accordingly, audit firm size and audit fee can be recognized as the determinants of audit quality.

Furthermore, findings reveal that audit tenure and auditor rotation do not play a significant role in determining the quality of financial audits. This finding is consistent with those of Al-Thuneibat et al.(2010), Aronmwan et al. (2012), Enofe et al. (2013), Salehi et al. (2019), Sari et al. (2019), Kalanjati et al. (2019), and Calocha and Herwiyanti (2020). In addition, leverage has a significant negative impact on audit quality, indicating a higher quality of audits when the leverage is low.

5. CONCLUSION

This study is conducted with the aim of investigating the determinants of the financial audit quality of listed companies in the CSE. To achieve the study's main purpose, the researcher selected 50 companies as the sample representing the different sectors in CSE. According to descriptive statistics, the majority of listed entities have obtained unmodified opinions, indicating that they have a sound internal control system in place for financial reporting, management has a more robust representation of financial statements, and financial statements are presented in accordance with the applicable financial reporting framework.

The outcome of the regression analysis suggests that the audit firm size and audit fee have a significant positive impact on the audit quality, whereas the audit tenure and auditor rotation have a negligible effect on the audit quality. Accordingly, the main objective of the study is achieved by identifying audit firm size and audit fee as the determinants of financial audit quality. It implies that the appointment of an audit firm out of the Big Four is a crucial factor in enhancing the financial audit quality. Furthermore, The audit fee has a significant effect on the audit quality. The greater the audit charge, the higher the audit quality. This may be because the audit fee increases with the higher involvement of senior audit staff such as the engagement partner, engagement quality review partner, audit manager and other qualified seniors in the audit. The study's findings imply that the audit tenure and auditor rotation do not significantly impact the audit quality though it is mandatory to rotate the auditor at least once every five years.

Although the study's findings are considered robust, there are some limitations, including the study's use of a secondary data analysis approach to analyze the drivers of audit quality, sample size constraints, and sample period constraints. Therefore, future studies are encouraged to incorporate managers' and auditors' perceptions, utilizing a triangulation technique and a sufficiently high sample size.

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COMPARISON OF FINANCIAL LITERACY IMPACT ON RETIREMENT PLANNING DECISIONS AMONG PUBLIC AND PRIVATE SECTOR WORKERS IN SRI LANKA

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ABSTRACT

This paper intends to identify and compare the impact of financial literacy on retirement planning decisions among public and private-sector workers in Sri Lanka. Ultimately, this study examines the level of financial literacy among the labour force in emerging economies such as Sri Lanka and their behavioural aspects in planning future retirement. Based on the prior literature, we divided financial literacy into savings behaviour (SB), payment mechanism (PM), and awareness of financial products (AFP) and tested those variables with retirement planning decisions. We used the positivism research philosophy and deductive research approach with the experimental research strategy and quantitative methods to address the research question. The study investigated 662 currently occupied workers in the public and private sectors using convenient sampling. We collected the primary data through a structured questionnaire and used the multinomial logistic regression model to test the hypotheses. The results confirmed a significant positive relationship between savings behaviour and retirement planning decisions, while awareness of financial products confirmed it to be negative and significant. The comparison of means indicated that the low financial literates are more likely to be in the public sector; thus, high financial literates are equally distributed among the public and private sectors. Finally, the results concluded that retirement planning decisions are higher for the public sector than in the private sector. Thereby, we recommend future studies to identify the reasons for having higher retirement planning in the public sector while their financial literacy is comparatively low. Further, we recommend developing more awareness among public sector workers to enhance voluntary retirement planning than government-funded retirement planning.

Keywords: Financial Literacy, Retirement Planning, Public and Private Sector, Savings Behaviour, Awareness of Financial Products

1. INTRODUCTION

Insufficient retirement savings would lead retirees to experience difficulties in maintaining their pre-retirement standard of living. Ultimately this will direct retirees to rely on welfare benefits (Mahdzan et al., 2017). Thus, developed countries use many official retirement-support programs, including private pensions, government welfare systems, and personal savings accounts (Minh & Huu, 2016). Mostly in developing countries, family and relatives provide retirement support (World Bank

and the Consultative Group, 2004). Thus, Tan (2015) stated that Malaysian retirees are highly dependent on family, especially on children at their retirement.

As revealed by the Health and Retirement Survey conducted in the United States, roughly 25% of retirees undergo a decline in psychological well-being one year after retirement (Wang & Bodner, 2007; Wong & Earl, 2009). Yet, a study revealed that it is possible to obtain positive changes in well-being by increasing the retirement resources between the pre-and post-retirement phases (Yeung & Zhou, 2017).

Though planning is recommended as a "more successful transition" into retirement (Petkoska & Earl, 2009), prior studies identified that behavioural factors such as time preference, risk attitude, savings behaviour, confidence, and economic knowledge impact inadequate personal retirement (Hanna et al., 2011; Tanaka et al., 2010; Van Rooij et al., 2011). Albeit many researchers revealed a robust relationship between retirement planning and financial literacy (Fornero and Monticone, 2011; Brown and Graf, 2013; Crossan et al., 2011), studies rarely compare the different financial literacy levels among public and private sector workers and their impact on retirement planning. Thereby, the current study focuses on identifying and comparing the impact of financial literacy levels among public and private sector workers on their retirement planning decisions.

Table 5: Aggregate Consumption and Savings (as a percentage of GDP)

Item	2018	2019	2020
Private consumption	67.8	69.8	70.7
Government consumption	9.1	9.4	10.4
Private savings	24.2	24.0	21.6
Government savings	-1.2	-2.7	-1.1

Source: Central Bank Annual Report 2019

As per the Central Bank Annual Report, 2019, the Sri Lankan economy experiences a considerable gap between consumption and savings. Parallelly the continuous negative government savings emphasize the limited capacity of the government budget to afford the further expansion of pension and retirement benefit payments. Also, the lesser the household savings, the higher the dependency ratio. Parallelly, a study revealed that a one percentage increment in the dependency ratio could lower the household savings rate as a per cent of gross domestic production and disposable income (Sophia, 2019). Thus, understanding retirement planning behaviour would be beneficial for households, government, and economic policymakers.

A study observed that the level of financial literacy among higher education students in Sri Lanka had not been properly examined (Edirisinghe et al., 2015). Thus, a preliminary idea about the degree of financial literacy is necessary to enhance the quality of life within Sri Lanka. Also, older employees who lack the basic knowledge of financial literacy are less likely to make investment planning decisions in different life stages in their life cycles (Lusardi and Mitchell, 2007). Thus, the current study focuses on addressing the research question:

Does the level of financial literacy among public and private sector workers have an impact on retirement planning?

2. LITERATURE REVIEW

Financial literacy, or making effective decisions and judgments when utilizing and managing money (Schagen & Lines, 1996), followed by a series of abilities such as reading, money managing, analysing, interpreting, making personal judgments, and taking action to gain (Vitt et al., 2000).

Financial literacy was measured by using interest rate, inflation rate, and stock in many previous studies (Fornero and Monticone, 2011; Brown and Graf, 2013; Crossan et al., 2011). Atkinson and Messy (2012) considered financial knowledge, behaviour, and attitudes to measure financial literacy. They revealed a positive relationship between financial behaviour and financial literacy. They measured financial knowledge based on the knowledge to calculate simple interest rates on a savings account. Thereby, being aware of the financial products and their cost is a sign of being financially literate.

The behaviour of a particular individual has a significant impact on their financial well-being (Atkinson and Messy, 2012). Thus, studies revealed a significant positive relationship between savings behaviour and financial literacy (Peiris, 2021; Jamal et al., 2015; Henager and Mauldin, 2015; Zazili, 2017). Parallelly, healthy credit card use creates financial satisfaction while developing strong confidence among individuals (Atlas et al., 2019). Perera (2020) revealed that individuals who use credit cards as a payment mechanism hold a high financial literacy rate. Atkinson and Messy (2012) considered attitudes and preferences as a key element of financial literacy measured using attitudes toward money and planning for the future.

Meanwhile, retirement planning is a simple and direct way to look forward to individuals' potential vulnerability in the future (Lusardi and Mitchell, 2007). Retirement planning is closely related to the individual's life cycle, and the individual must plan for retirement, especially in terms of finance (Mohidin et al., 2013).

Many behavioural studies revealed a positive relationship between retirement planning and financial literacy within different economies (Fornero and Monticone, 2011; Almenberg and Säve-Söderbergh, 2011; Brown and Graf, 2013; Nguyen et al., 2017; Klapper and Panos, 2011; Agnew et al., 2013). A study revealed that the level of financial literacy is moderate among Germans and confirmed that lower financial literates have less propensity to plan their retirement (Bucher-Koenen & Lusardi, 2011). In contrast, a study revealed a minor relationship between retirement planning and the financial literacy of Dutch households in the Netherlands (Van Rooij et al., 2011). Lusardi and Mitchell (2011) found a lower association between retirement planning and financial literacy in the United States. According to Perera (2020), if someone has a better financial literacy rate, that person tends to select a retirement plan.

Besides, the USA-based study revealed that government sector workers have higher preparedness than nongovernment employees for retirement. Also, lower-income

earners are less likely to save for their retirement while educated individuals are more likely to save (Chatterjee, 2010). Further, a South Asia-based study highlighted the low level of financial literacy among the large young workforce in South Asia. In spite, it highlighted the requirement of enhancing financial planning knowledge among households to expand the voluntary coverage of formal pension agreements (Kim & Bhardwaj, 2011). Thus, this study focused on filling this literature gap by evaluating the impact of the financial literacy level among public and private sector workers on retirement planning in Sri Lanka.

3. METHODOLOGY

Based on the objectives of the study, we generated hypotheses using existing literature, following Positivism. We applied the deductive research approach and developed hypotheses based on prior findings to continue the study. Thereby, we followed quantitative research methods to analyse the duly collected data. The study used the mono-research method and collected cross-sectional data based on a structured questionnaire to quantify the variables addressed in the below conceptual framework.

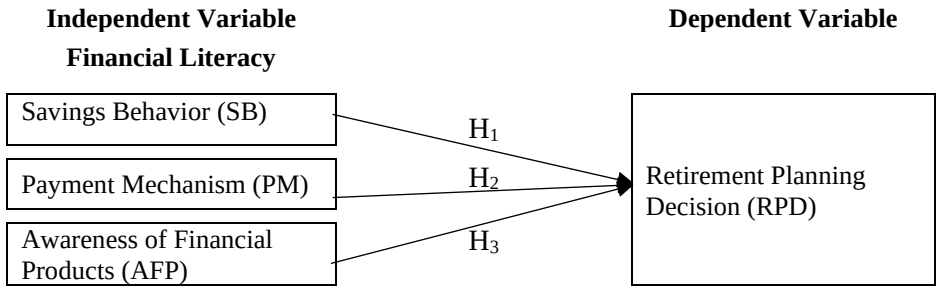

Figure 2: Conceptual Diagram

Since the questionnaire consists of both categorical and Likert-scale questions, and the dependent variable (response variable) is categorical (El-Habil, 2012), we used multinomial logistic regression to express the relationships of the conceptual framework.

If there are many predictors for binary response Y, let k denote the number of predictors, and the model for log odds is,

$$Logit[P(Y=1)] = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \cdots + \beta_k x_k$$

The alternative formula for π(x) is,

$$\pi(x) = \frac{\exp(\alpha + \beta_1 x_1 + \cdots + \beta_k x_k)}{1 + \exp(\alpha + \beta_1 x_1 + \cdots + \beta_k x_k)}$$

$$\log\left[\frac{\pi_i}{1-\pi_{ji}}\right] = \alpha_{10} + \beta_{11} SB_{1i} + \beta_{12} PM_{2i} + \beta_{13} AFP_{3i}$$

The effect of x_i is explained through the parameter β_i on the log odds that is Y = 1, controlling other x_j. Thereby, $\exp(\beta_i)$ is the effect on the odds of a one-unit increase in x_i, at fixed levels of other x_j.

The population of the study is the total labour force in Sri Lanka. As per the statistics published, the total labour force within the first quarter of 2020 was 8,503,617 (Department of Census and Statistics, 2020). Morgan's table suggested 385 samples for the above population. Based on convenience, we distributed the questionnaire and collected 662 responses from currently occupied public and private-sector workers. Thus, we considered all 662 responses for the analysis.

Accordingly, the alternative hypotheses considered for the study are as follows.

H_1: Savings Behaviour has a significant impact on individual retirement planning decision

H_2: Payment Mechanism has a significant impact on individual retirement planning decision

H_3: Awareness of Financial Products has a significant impact on individual retirement planning decision

Operationalization of variables tables illustrates the measurement of each variable.

Table 6: Operationalization of Variables

Concept	Variable	Indicator	Reference
Financial Literacy	Savings Behaviour	Monthly savings Sufficiency of salary Monthly budget	(Dovie, 2018)
	Payment Mechanism	Comparing offers of credit card Monthly credit card rate Use of credit card	(Heenkkenda, 2014)
	Awareness of Financial Products	Knowledge of investing in financial products Buying rate of T-Bills Knowledge of Share trading	(Heenkkenda, 2014)
Retirement Planning Decision	Retirement Planning	Having a retirement plan	(Lusardi and Mitchell, 2007)

4. DATA ANALYSIS

Frequency analysis is used to understand the demographic characters of the respondents in terms of their gender, civil status, and employment sector. Based on the details in Table 3 major proportion of respondents are females (56.0%) and males are only 44.0%. While 44.0% are married and 56.0% are single. Also, 58% and 42% of respondents are respectively occupied by private-sector and public sector.

Table 7: Demographic Characteristics

	Category	Numbers	Percentage (%)
Gender	Male	294	44
	Female	368	56
Civil Status	Single	368	56
	Married	294	44
Employment Sector	Private	386	58
	Public	276	42

We measured the level of financial literacy by using six (06) multiple-choice questions focusing on the inflation rate and interest rate. We categorized the respondents into three (03) financial literacy levels as low (02 or less correct answers), moderate (03 correct answers), and high (04 or more correct answers) based on their scores. As per table 4, out of the 662 respondents, there are 163 respondents with low levels of literacy while 114 respondents have a moderate literacy level. However, 385 respondents have a high level of literacy and as a percentage, it is 58%.

Table 8: Level of Financial Literacy

Level Literacy	Frequency	Percentage (%)
Low	163	25
Moderate	114	17
High	385	58
Total	662	100

Testing the Reliability of the Questions

We used Cronbach's Alpha statistic to test the reliability of questions used to define the variables in the conceptual framework.

Table 9: Cronbach's Alpha Values

Variable	Reliability Statistics	
	Cronbach's Alpha	N of Items
Savings Behavior (SB)	0.740	3
Payment Mechanism (PM)	0.718	3
Awareness of Financial Products (AFP)	0.795	3

According to table 5, Cronbach's Alpha of SB, PM, and AFP is more than 0.7. So, we can confirm strong reliability within the questionnaire when defining the variables through the questions.

Testing the Adequacy of the Sample and Multicollinearity of the Variables

Table 10: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.657
Bartlett's Test of Sphericity	Approx. Chi-Square	347.874
	df	3
	Sig.	.000

KMO statistics measures the sampling adequacy of the variables, and Bartlett's test outlines the redundancy between those variables. The KMO value is 0.657, higher

than the minimum recommended value of 0.5. Thus, it emphasizes the adequacy of the sample size to conduct the study. The P-value of the Chi-square statistic is 0.000 < 0.05 rejects the null hypothesis of Bartlett's Test, thus it is concluded that the variances are not equal between the dependent variables. Hence, there is no redundancy between the dependent variables.

Multinomial logistic regression results

Table 11: Multinomial Logistic Regression Results

RPD[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
1.0	Intercept	-0.934	0.448	4.341	1	0.037			
	SB	0.529	0.124	18.270	1	**0.000**	1.698	1.332	2.165
	PM	0.127	0.125	1.043	1	0.307	1.136	0.889	1.451
	AFP	-0.321	0.118	7.353	1	**0.007**	.725	0.575	0.915

a. The reference category is .0.

$$\log\left[\frac{\pi_i}{1-\pi_{ji}}\right] = -0.934 + .529SB_1 + .127PM_2 - .321AFP_3$$

Table 6 illustrates that Savings behaviour (SB) has a significant positive impact on the retirement planning decision (RPD) as 0.529. It indicated that increasing savings behaviour could increase retirement planning decisions (P = 0.000 < 0.05) from 52.9%. Payment mechanism (PM) has no significant impact on the retirement planning decision (RPD) (P = 0.307 > 0.05). According to the above table, awareness of financial products (AFP) has a significant negative impact on retirement planning decisions (RPD) (P = 0.007 < 0.05). Also, as per Table 7, the significance of the chi-square statistic confirmed that the overall model is significant (P = 0.001, 0.000 < 0.05).

Table 12: Goodness-of-fit Test

	Chi-Square	df	Sig.
Pearson	377.381	295	0.001
Deviance	469.739	295	0.000

Hypothesis Testing

Table 13: Summary of Hypothesis Testing

Hypothesis	Coefficient	Reported sign	P-Value	Relationship	Result
H_1	0.529	Positive	0.000	Significant	Accepted
H_2	0.127	Positive	0.307	Insignificant	Rejected
H_3	(-0.321)	Negative	0.007	Significant	Accepted

H_1: Savings Behaviour has a significant impact on individual retirement planning decisions.

The P-value of the regression of savings behaviour was 0.000 with a 95% confidence level we accept the alternative hypothesis. Accordingly, we can conclude that there is a significant relationship between savings behaviour (SB) and retirement planning decisions (RPD).

H_0: Payment Mechanism has no significant impact on individual retirement planning decisions.

The P-value of the regression of the payment mechanism was 0.3071 with a 95% confidence level; therefore, we accept the null hypothesis. Accordingly, we can conclude that there is no significant relationship between the payment mechanism (PM) and retirement planning decisions (RPD).

H_3: Awareness of Financial Products has a significant impact on individual retirement planning decision

The P-value of the regression of Awareness of financial products was 0.007 with a 95% confidence level, therefore, we accept the alternative hypothesis. Accordingly, we can conclude a significant relationship between awareness of financial products (AFP) and retirement planning decisions (RPD).

ANOVA Results

Table 10 represents the action effect of financial literacy on the employment sector. There are three levels of financial literacy, namely low (1.0), moderate (2.0), and high (3.0), and two employment sectors, namely private (1.0) and public (2.0).

When considering the low financial literacy level, government workers have low financial literacy than private-sector workers. People with moderate financial literacy are more likely to be in the public sector than in the private sector. Furthermore, there is a small difference between the high financial literacy level of the public and private sectors. When comparing the three levels of financial literacy, most public sector workers are within moderate financial literacy levels, and most private sector workers are within high financial literacy levels.

Table 14: Two-way ANOVA Results

Financial Literacy* Employment Sector					
Dependent Variable: Financial Literacy		**Mean**	**Std. Error**	**95% Confidence Interval**	
				Lower Bound	**Upper Bound**
1.0	1.0	0.467	0.051	0.368	0.567
	2.0	0.592	0.058	0.478	0.705
2.0	1.0	0.441	0.059	0.326	0.557
	2.0	0.696	0.072	0.555	0.836
3.0	1.0	0.624	0.032	0.560	0.687
	2.0	0.673	0.038	0.597	0.749

Table 11 represents the pairwise comparison of the RPD among two (02) employment sectors, where 01 indicates the private sector and 02 indicates the public sector. The results confirmed that the mean difference between public and private sector workers is statistically significant ($P = 0.001 < 0.05$).

Table 15: Pairwise Comparison of Employment Sector

Pairwise Comparisons

Dependent Variable: Employment Sector		Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1.0	2.0	-0.143*	.043	0.001	-.228	-.057
2.0	1.0	0.143*	.043	0.001	.057	.228

Based on estimated marginal means

**. The mean difference is significant at the .05 level.*

b. Adjustment for multiple comparisons: Bonferroni.

This has been further explained by Figure 2 which is the estimated marginal means of RPD of each employment sector. Accordingly, RPD is higher for the public sector (02) than that of the private sector (01).

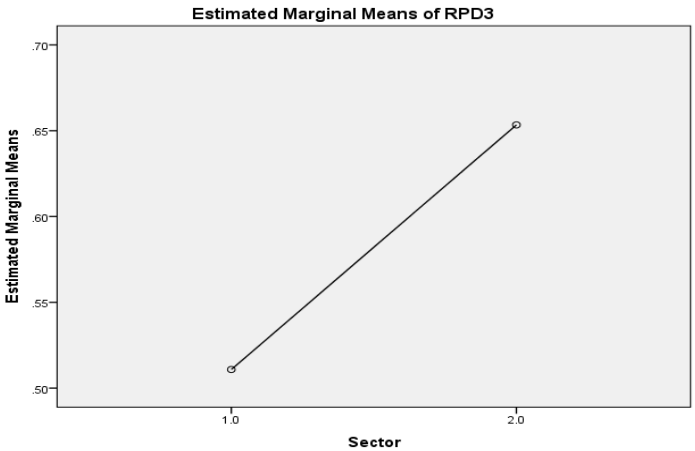

Figure 3: Estimated Marginal Means of RPD

5. RESULTS DISCUSSION AND CONCLUSION

This study intends to compare the level of financial literacy among public and private sector workers and its' impact on retirement planning in Sri Lanka. The study focused on three financial literacy determinants (savings behaviour, payment mechanism, and awareness of financial products), and hypotheses were tested using the Multinomial logistic regression model results.

H_1: Savings Behaviour has a significant impact on individual retirement planning decisions.

The study accepted the alternative hypothesis and confirmed a significant positive relationship between savings behaviour and retirement planning decisions. The hypothesis complies with the prior literature, which emphasizes the influence of savings behaviour on retirement planning decisions (Dovie, 2018; Peiris, 2021; Jamal et al., 2015; Henager and Mauldin, 2015; Zazili, 2017).

H_0: Payment Mechanism has no significant impact on individual retirement planning decisions.

However, the results indicated that the payment mechanism has an insignificant relationship with retirement planning decisions. Accordingly, we rejected the alternative hypothesis derived. We concluded that the effective use of alternative payment methods (credit cards) does not influence retirement planning decisions among individuals in Sri Lanka. Even though Atlas et al. (2019) explained the capacity of developing strong confidence among individuals through healthy credit card usage while creating financial satisfaction as a payment mechanism, it has not been a choice among Sri Lankan individuals to plan their retirement.

H3: Awareness of Financial Products has a significant impact on individual retirement planning decision

The findings of the current study accepted the alternative hypothesis and confirmed that there is a significant negative relationship between awareness of financial products and retirement planning decisions. Besides, Heenkkenda (2014) revealed a significant positive relationship between awareness of financial products and retirement planning decisions among government workers and an insignificant relationship among the business sectors.

The mean comparison revealed that people with low financial literacy are more likely to be in the public sector than in the private sector. People with moderate financial literacy are more likely to be in the public sector than in the private sector. However, there are almost equal proportions of high financial literacy among the private and public sectors. However, when comparing the frequencies of financial literacy levels, most government sector workers are within moderate financial literacy levels, and most private sector workers are within high financial literacy levels. Meanwhile, high financial literates are more prone to plan their retirement, while low financial literates are yet to develop in both sectors.

Further, based on the findings, we can conclude that using savings behaviour and awareness of financial products could explain financial literacy among individuals more precisely. The current findings also confirm the significant relationship between financial literacy and retirement planning among both public and private sector workers. However, the mean comparison confirms the proposals of Kim and Bhardwaj (2011) and signifies the necessity of enhancing the financial literacy among public sector workers. Even though the public sector workers in Sri Lanka show a greater preparedness for retirement planning root cause for that has to be identified. Since they are entitled to a government-funded pension scheme, based on the proposals of Kim and Bhardwaj (2011), it is necessary to promote voluntarily funded pension agreements which would ultimately reduce the burden of recurrent expenditure on the government budget.

Eventually, financial institutions and the Labour Department can conduct awareness programs for government and private-sector workers to enhance their knowledge of retirement planning and financial literacy.

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IMPACT OF LIQUIDITY ON PROFITABILITY OF LICENSED COMMERCIAL BANKS IN SRI LANKA

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ABSTRACT

The banking sector has a significant impact on economic movements in all countries since banks play a pivotal role in improving overall economic activities, which are crucial for any country's economic development. A profitable banking sector can endure negative shocks and contribute to the financial system's stability. Whether Bank Liquidity has a significant impact on Bank Profitability is still open for debate. Previous studies have found mixed results on this relationship. Some researchers found in their study that liquidity has a positive impact on profitability, whereas others found that it has no impact or negative impact. Regarding this problem, many studies have been conducted in both developed and developing countries. But in Sri Lanka, limited attention is given to this problem. Given this background, the present study investigates the impact of bank liquidity on bank profitability in Sri Lanka, using all 24 Licensed Commercial Banks from 2016 to 2020. Secondary data used for this study are from various sources, such as the annual reports of the banks and the Central Bank website. For data analysis, descriptive statistics, correlation analysis, and panel data regression models were employed. Return on Assets (ROA) and Return on Equity (ROE) are proxies for bank profitability, while Liquidity Ratio (LR) and Current Ratio (CR) are the proxies for bank liquidity. Further, Leverage (LEV) and Bank Size (BSIZE) are used as control variables. Using balanced panel data, employing the Generalized Method of Moment (GMM), the impact of bank liquidity on bank profitability is tested. The findings of this study revealed that the liquidity ratio has a significant and negative impact on the bank's profitability, while the current ratio has an insignificant impact on the bank's profitability. Further, Leverage and Bank Size also have an insignificant impact on profitability. In line with the above findings, it can be concluded that banks should focus on liquidity management and implement effective liquidity management techniques in order to maintain adequate liquidity levels to maximize their profitability.

Keywords: Bank liquidity, Bank profitability, Licensed Commercial Banks, ROA, ROE

1. INTRODUCTION

Background of the study

The banking sector has a significant impact on economic movements in all countries since banks play a pivotal role in improving overall economic activities, which are crucial for any country's economic development (Monnin and Jokipii, 2010). Batagoda, Ediriweera, and Deshika (2019) also mentioned that an efficient financial

sector is a key determinant of a country's economic growth and development. The importance of the banking sector emphasizes the need for stability in the sector vulnerable to financial distortions. The economy of any country depends heavily on the performance of its banking sector. During the last two decades, the banking sector in the world has experienced some profound changes as improvements in technology and the inevitable forces driving globalization, which creates both opportunities for development and challenges for the banking industry to remain profitable in this increasingly competitive environment (Morawakage and Madhuwanthi, 2019). A profitable banking sector can endure negative shocks and contribute to the financial system's stability. Therefore, banks play an increasingly pivotal role in both economic development and the growth of any country.

In the existing literature, bank liquidity has been considered a fundamental variable in explaining bank profitability by various researchers. Whether Bank Liquidity has a significant impact on Bank Profitability is still open for debate. Suganya and Kengatharan (2018) have stated that managing liquidity becomes the most important decision because inadequate liquidity may be injurious to the smooth operations of the firm as well as excess liquidity can be disturbed to achieve greater profits. Therefore, banks should focus on liquidity management and implement effective liquidity management techniques in order to maintain adequate liquidity levels for maximizing their profitability.

The banking sector in Sri Lanka

In Sri Lanka, the banking sector comprises two main components: Licensed Commercial Banks (LCBs) and Licensed Specialized Banks (LSBs). These two sectors dominate the financial system and account for the highest share of total assets in the financial system (Central Bank of Sri Lanka, 2020). Accordingly, there were 30 banks in the banking sector with 06 LSBs and 24 LCBs, including 11 branches of foreign banks as of 2020. In 2019, there were 26 LCBs listed on the Central Bank, but the banking licenses awarded to ICICI Bank Limited and Axis Bank Limited to operate in Sri Lanka were terminated in 2020 due to decisions made by their Head Offices (Central Bank of Sri Lanka, 2020).

The Central Bank of Sri Lanka (CBSL) is the apex institution in the financial sector in Sri Lanka. It was established in 1950 under the Monetary Law Act No 58 of 1949 (MLA) as a semi-autonomous body and is governed by a five-member Monetary Board (Annual Report of Central Bank, 2019). By considering the Central Bank published data, LCBs can be identified as the single most important category of financial institutions within the banking sector when considering the terms of asset base and the magnitude of services provided. As of the end of 2020, the banking sector dominated the financial system with a market share of 72.5 per cent of total assets. The developments in the banking sector have led to an increase in resource productivity, an increasing level of deposits, credits and profitability and a decrease in non-performing assets (Weerasinghe and Perera, 2013). Further, Batagoda, Ediriweera, and Deshika (2019) have stated that an efficient, stable and disciplined financial system in a country causes rapid growth in every part of the economy. So,

the health of the financial system of Sri Lanka depends to a large extent on the soundness of the financial institutions, particularly the LCBs (Weerasinghe and Perera, 2013).

Table 1: Banking Sector in Sri Lanka

Type of Banks	No. of Institutions		Total Assets (Rs. Bn)		Market Share (%)	
	2019(a)	2020(b)	2019(a)	2020(b)	2019(a)	2020(b)
Banking Sector	32	30	14442.1	17087.9	72.0	72.5
Licensed Commercial Banks (LCBs)	26	24	10944.0	12828.8	54.5	54.4
Domestic Banks	13	13				
Foreign Banks	13	11				
Licensed Specialized Banks (LSBs)	6	6	1578.7	1837.5	7.9	7.8
National Level Savings Banks	1	1				
Housing Finance Institutions	2	2				
Other LSBs	3	3				
Central Bank	-	-	1919.4	2421.6	9.6	10.3

(a) Revised
(b) Provisional

Source: Annual Report of Central Bank (2020)

2. LITERATURE REVIEW

Theoretical Review

This study is based on some theories which have been presented to provide awareness of the association between liquidity and profitability. According to the trade-off theory, greater liquidity is usually expensive for banks, suggesting greater liquidity decreases profitability. The modern portfolio theory approach is most relevant and plays an important role in bank profitability determinants studies. Thevaruban (2017) said that the modern portfolio theory approach is the most relevant and plays an important role in bank profitability determinants studies. Also, it implies that portfolio diversification and the expected portfolio composition of commercial banks are the outcomes of the management decisions of the bank. Further, the ability to obtain maximum profits depends on the feasible set of assets and liabilities determined by the management and the unit costs incurred by the bank for producing each component of assets (Nazongang and Atemnkeng, 2006).

Empirical Review

There is extensive literature on the relationship between bank liquidity and its profitability concerning many countries but not sufficient studies have been done on the Sri Lankan context (Jeevarajasingam, 2014; Suganya and Kengatharan, 2018; Batagoda, Ediriweera, and Deshika, 2019). The present study will attempt to fill the vacuum. De Silva, Azam, and Chinna (2019) stated that many factors could impact

the bank's profitability, but exploring all of these factors in this study is impossible. Therefore, only the impact of bank liquidity on bank profitability is a concern in this study. Previous studies have yielded mixed results on this relationship. Some researchers found in their study that liquidity has a positive impact on profitability, whereas another found that it has no impact or negative impact.

A study carried out by Batagoda, Ediriweera, and Deshika (2019) revealed that liquidity does not directly impact the profitability of LCBs in Sri Lanka. The study uses liquidity ratio as the determinant of profitability and ROA as the dimension of profitability. Correlation and regression analysis were done by Jeevarajasingam (2014) in his study, and the results showed that the liquidity ratio has a strong positive correlation with return on assets, but there is no relationship between bank liquidity and its profitability by taking samples from all commercial banks in Sri Lanka. Weerasinghe and Perera (2013) have observed that large banks have recorded more profits due to economies of scale than the banks, which are well-sound with a higher regulatory capital ratio. Further, the results from the panel regression suggest that the liquidity was negatively related to the commercial banks' profitability in Sri Lanka. According to Dabiri, Yusof, and Wahab (2017), liquidity negatively and significantly affects the profitability of Islamic banks in the UK both in the short and long run. Ajanthan (2013), Khan and Ali (2016), Ibrahim (2017) and Thevaruban (2017) have found that there is a positive relationship between bank liquidity and bank profitability. Other than the above studies, Adebayo, David, and Samuel (2011) and Priya and Nimalathasan (2013) have found a negative relationship between bank liquidity and profitability. Abdullah and Jahan (2014) and Suganya and Kengatharan (2018) have found no relationship between bank liquidity and profitability.

These results cause a better understanding of the effect of bank liquidity on bank profitability and also an increase in interest in this subject. Regarding this problem, many studies have been conducted in both developed and developing countries. But in Sri Lanka, limited attention is given to this problem (Suganya and Kengatharan, 2018). Given this background, the present study investigates the impact of liquidity on profitability in Sri Lanka, using all Licensed Commercial Banks over the period from 2016 to 2020.

3. METHODOLOGY

This study employed Liquidity as the independent variable and is measured using Liquidity Ratio (LR) and Current Ratio (CR). Profitability is the dependent variable of the study and is measured by using Return on Assets (ROA) and Return on Equity (ROE). Although the primary objective of the study is to identify the impact of liquidity on the profitability of all Licensed Commercial Banks in Sri Lanka, Bank Size (BSIZE) and Leverage (LEV) have been taken as control variables. Bank Size is measured by using the logarithm of total assets.

This study adopted Positivism as the research philosophy because this study is highly objective, structured and focuses on causality relationships. And also study used the Deductive approach because researchers aim at testing existing theories using empirical data. Here, as the target population, all Licensed Commercial Banks were

selected because they are the single most important category of financial institutions within the Sri Lankan banking sector (Batagoda, Ediriweera, and Deshika, 2019). As of the end of 2020, there were 24 Licensed Commercial Banks in Sri Lanka. For this study, all those banks were considered as the sample. For the study purpose, secondary data was gathered from multiple sources such as annual reports, Colombo Stock Exchange website, and the Central Bank website for the 05 years period from 2016-2020. Collected data were analyzed using Eviews 10 statistical software and using balanced panel data, employing the Generalized Method of Moment (GMM) and the following four regression models were developed based on the variables in the study.

The empirical models used in this study for panel data are given as,

Model 1: $ROA_{it} = \beta_0 + \beta_1 LR_{it} + \beta_2 LEV_{it} + \beta_3 BSIZE_{it} + \mu_{it} + \varepsilon_{it}$ ..... (1)

Model 2: $ROA_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LEV_{it} + \beta_3 BSIZE_{it} + \mu_{it} + \varepsilon_{it}$ ..... (2)

Model 3: $ROE_{it} = \beta_0 + \beta_1 LR_{it} + \beta_2 LEV_{it} + \beta_3 BSIZE_{it} + \mu_{it} + \varepsilon_{it}$ ..... (3)

Model 4: $ROE_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LEV_{it} + \beta_3 BSIZE_{it} + \mu_{it} + \varepsilon_{it}$ ..... (4)

$\mu i \; is \; an \; individual \; specific \; characteristic$

Where; ROE: Return on Equity, ROA: Return on Assets, LR: Liquidity Ratio, CR: Current Ratio, BSIZE: Bank Size, LEV: Leverage, β: Coefficients of the variables, ε: Random error term

4. FINDINGS AND DISCUSSIONS

Descriptive statistics, Correlation, and Panel Regression Model specification tests have been tested to generate the results.

Table 2: Correlation Analysis Results

	ROE	ROA	LR	LEV	CR	BSIZE
ROE	1.000					
ROA	0.894	1.000				
LR	-0.209	-0.205	1.000			
LEV	0.058	-0.079	-0.027	1.000		
CR	-0.123	-0.075	0.413	-0.095	1.000	
BSIZE	-0.046	-0.074	-0.135	0.399	-0.128	1.000

The statistical tool of correlation analysis describes the degree to which one variable is linearly related to another. It describes the tendency of two variables to vary together. That means it describes the tendency of high or low values of one variable to be regularly associated with either high or low values of the other variable. The absolute size of the coefficient (from 0-1) indicates the strength of that tendency to co-vary. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases. Correlation measures the co-movements

between securities using an easily interpreted range of -1 to +1, with endpoints indicating more similar co-movements.

The correlation analysis (Table 2) shows a weak relationship of LR with both ROA and ROE. Similarly, LEV, CR and BSIZE also have a weak relationship with ROA and ROE.

The four models given were analyzed using the Generalized Method of Moment (GMM) to investigate whether there is an impact of bank liquidity on bank profitability.

Table 3: Model Results

	(1) ROA	(2) ROA	(3) ROE	(4) ROE
Constant	3.385	2.529	20.088	11.129
	(0.022)	(0.084)	(0.276)	(0.542)
LR	-0.681		-8.743	
	(0.018)**		(0.016)**	
CR		-0.094		-1.703
		(0.341)		(0.170)
LEV	-0.008	-0.009	0.189	0.163
	(0.595)	(0.525)	(0.316)	(0.396)
BSIZE	-0.034	-0.025	-0.601	-0.500
	(0.406)	(0.553)	(0.244)	(0.338)

*Note: Probability value is given in parenthesis, and ** indicates significance at 5%.*

Model I: $ROA_{it} = 3.385 - 0.681LR_{it} - 0.007LEV_{it} - 0.034BSIZE_{it}$

According to panel data analysis using the GMM method, Model I showed that LR has a negative impact on ROA, and it is statistically significant as well, which is confirmed by the negative coefficient of -0.6814 and the probability value of 0.0181. Further, LEV and BSIZE have no impact on ROA. The final result of the model concludes that the LR has a significant impact on ROA.

Model II: $ROA_{it} = 2.529 - 0.094CR_{it} - 0.009LEV_{it} - 0.024BSIZE_{it}$

According to panel data analysis using the GMM method, Model II showed that the CR, LEV and BSIZE have no impact on ROA.

Model III: $ROE_{it} = 20.087 - 8.743LR_{it} + 0.188LEV_{it} - 0.600BSIZE_{it}$

According to panel data analysis using the GMM method, Model III showed that LR has a negative impact on ROE, and it is statistically significant as well, which is confirmed by the negative coefficient of -8.7432 and the probability value of 0.0158. Further, LEV and BSIZE have no impact on ROE. The final result of the model concludes that the LR has a significant impact on ROE.

Model IV: $ROE_{it} = 11.129 - 1.702CR_{it} + 0.162LEV_{it} - 0.500BSIZE_{it}$

According to panel data analysis using the GMM method, Model IV showed that the CR, LEV and BSIZE have no impact on ROE.

In line with the previous studies and considering bank liquidity, a negative impact between bank liquidity in terms of liquidity ratio and bank profitability in terms of

ROA was found. This result is in line with the previous study carried out by Wijethunga and Wijekoon (2018) for the determinants of internal and external factors of bank profitability of LCBs in Sri Lanka using secondary data over the period of 2009 to 2007 by carrying a multiple panel regression. Nishanthini and Meerajancy (2015), who focused on liquidity and profitability trade-off with the samples of State Banks and Private Banks in Sri Lanka over the period of 2008-2012, concluded that there was a statistically significant negative impact between bank liquidity and its profitability. Furthermore, studies carried out by Weerasinghe and Perera (2013), and Dabiri, Yusof, and Wahab (2017) also found a negative impact between bank liquidity and profitability.

5. CONCLUSION

Based on the findings, this study can conclude that the Liquidity Ratio has a significant negative impact on profitability, while there is no impact of the Current Ratio on profitability in all Licensed Commercial Banks in Sri Lanka. That means when banks are maintaining liquidity at a higher level, their capacity to invest will decline, and it will directly impact profitability in a negative way. Further, Leverage and Bank Size have no impact on profitability. Therefore, a company needs to maintain an adequate level of liquidity because liquidity is greatly affected by the close relationship among them (Madushanka and Jathurika, 2018).

During the study, several factors caused the efficiency of the research work. The annual reports and the financial statements of some commercial banks were unavailable on the relevant bank websites because only 11 banks were listed on the Colombo Stock Exchange. Collecting the required secondary data from foreign banks was difficult. Additionally, the information provided in the financial statements of the annual reports was not in a standard format, and additional time was required to organize the information in a standardized presentable format for consistency of the information. Also, it could be fruitful to integrate the other internal and external factors such as capital adequacy, inflation rate, GDP growth, and operational efficiency, which affect the bank's profitability instead of taking only the bank's liquidity. Thus, research on the impact of bank liquidity on bank profitability is important in various aspects, such as profit maximizing, policy implications, and economic development. Regulators and policymakers can consider the findings of the study in formulating policy decisions in order to enhance the profitability of the banks since the profitable banks directly relate to the growth of the economy of the country.

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RELATIONSHIP BETWEEN CORPORATE GOVERNANCE AND CORPORATE SOCIAL RESPONSIBILITY: EMPIRICAL EVIDENCE FROM LISTED COMPANIES IN SRI LANKA

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ABSTRACT

COVID - 19 pandemic has heightened attention on corporate social responsibility worldwide. Empirical evidence suggests inconclusive evidence related to corporate governance and corporate sustainability, and there is a dearth of studies in this field in the Sri Lankan context. Therefore this study contributes to bridging the empirical gap by ascertaining the relationship between corporate governance and corporate social responsibility in Sri Lankan listed companies. This study applies a quantitative deductive approach, and a cross-sectional survey was conducted using 130 listed companies as a random sample of the study and collected data using data triangulation method using primary data employing a structured online questionnaire survey and secondary data using annual report 2019/2020 data. Corporate governance is considered an independent variable and operationalizes using the equilibrium variable model, including board size, board independence, CEO Duality, women on the board, board activity, and a sustainable committee. Corporate social responsibility (CSR) is a dependent variable measured using the CSR index, including the economic, social, and environmental responsibility sub-index. Initially, reliability and validity analysis was conducted for the CSR questionnaire, and descriptive analysis was conducted to examine the level of CSR in Sri Lanka. Pearson correlations and multiple regression techniques were used to ascertain the nature of the relationship and effect between variables. The research findings descriptive statistics of dependent variables revealed the highest mean of the study was gathered for the social variable, and it is 4.0350 in value, environment factors took the lowest mean value, and it is 3.9365 in value, economic factor mean value is 3.9777. Women on board and board size have a significant relationship and impact on the corporate social responsibility of the listed companies in Sri Lanka. This study will add stakeholder theory and resource dependence theory and have many implications for businesses and policym*akers.*

Keywords: Corporate Social Responsibility, Corporate Governance, Data Triangulation Method, CSR Index

JEL Classification: M14, G34, G20

1. INTRODUCTION

Businesses have been formed in many different ways to compete and satisfy human needs. A large majority of the population believes that businesses participate in

ethical business activities (Tilakasiri, 2013). According to researchers, many Sri Lankan enterprises have included CSR in their business strategy, which has become a crucial component of local business for many reasons(Tilakasiri, 2013). In Sri Lanka, there is no consensus on socially responsible behaviour. As a result, the business sector's CSR behaviour in Sri Lanka must be understood from this perspective (Rathnasiri,2003). The recent budget suggested many social, environmental, and economic growth initiatives. These three approaches have received significant funding to expand their operations. For example, under social integration, funds have been granted to the elderly, low-income families, women's and children's protection, animal conservation, and shoreline preservation(Rathnasiri, 2003).

The industrialization has spurred the pursuit of ever-increasing wants and expectations of people worldwide, and it has become a symbol of wealth and economic growth. However, it has resulted in exploiting the natural environment, which has thrown the ecological balance off. The disruption of ecological equilibrium has harmed humans and their surroundings. In the past three decades, recent industrial catastrophes and natural disasters have been connected to uneven industrialization, either directly or indirectly (Grove et al., 2011). As a result, environmentalists, governments, and organizations from all over the globe have highlighted a fundamental problem of environmental preservation. Environmental sustainability and development have risen to the top of the worldwide community's priority list. Various conferences and initiatives, such as the Earth Summit and the United Nations Environmental Program, raised awareness about this grave problem. Recognizing the significance of human health and well-being, governments and organizations have begun to take different measures in the interest of environmental preservation and sustainability. Environmental sustainability is critical for long-term growth and development since the combination of social, economic, and environmental sustainability helps to ensure long-term development (Ahmad, 2006). Most industrialized nations have made environmental protection a component of their strategy and have begun to provide environmentally friendly or green goods and services to their customers (Ganesan and Bhuvaneswari, 2016).

At first sight, governance refers to the authority and control used to manage and administer any organization within a framework of rules, roles, responsibilities, systems, procedures, and relationships. As a result, leaders and directors of boards of directors in any organization are expected to be held responsible for their actions while maintaining a high level of social awareness (Australian Stock Exchange, 2014). As a result, the board must shape and define the company's vision, fundamental beliefs, and values to govern corporate strategy and culture. Aside from their responsibility, the board should follow management policies and individual tasks following statutory frameworks and norms. Furthermore, the board is supposed to be in charge of all aspects of governance, including decision-making, organizational structure, operational and control procedures, and explaining the organizational design, which must be understood by all managers, workers, and shareholders (Baret, Board Governance, Roles and Responsibilities, 2013).

CSR has recently been a significant issue in the Sri Lankan business community. Consequently, the country's severe economic troubles, citizens, workers, customers, and other interested parties pressure the government and business sector to enhance the people's social and economic well-being (Tilakasiri, 2013). Families control most private firms in Sri Lanka, and there is no indication that these businesses are involved in charitable activities. After the Asian tsunami in 2004, private sector businesses in Sri Lanka began to recognize the benefits of CSR programs (Fernando, 2007). Sri Lanka's private sector is currently the most significant contributor to GDP, and private sector workers make up most of the workforce (CBSL, 2020).

Sri Lankan organizations, on the whole, are more concerned with CSR activities that benefit the external environment. On the other hand, internal CSR programs have been created by businesses to serve the organization's interests. Efforts to enhance employee working conditions, gender equality, equal opportunity, waste management, advertising truth, environmental stewardship, and ethical corporate practices are among them (Rathnasiri, 2003). However, according to CSR information in Sri Lanka, the conventional profit-maximizing mindset is dominant (Rathnasiri, 2003). In Sri Lankan organizations, awareness and comprehension of CSR are inadequate. The primary emphasis of this research is on the association between corporate social responsibility and corporate governance in Sri Lankan listed companies.

Few prior studies have investigated the link between corporate governance and corporate social responsibility. In the Sri Lankan context, studies on corporate governance and corporate social responsibility in selected commercial banks have been conducted (Tilakasiri, 2013). Empirical evidence suggests inconclusive evidence related to corporate governance and corporate sustainability, and there is a dearth of studies in this field in the Sri Lankan context (Kabir and Thai, 2017). Therefore, the researcher selects the research to investigate the link between corporate governance and corporate social responsibility in Sri Lankan companies.

The study's main objective is to examine the relationship between corporate governance and corporate social responsibility in listed companies in Sri Lanka.

Specific objective

1. To examine the relationship between corporate governance and social responsibility in listed companies in Sri Lanka.
2. To examine the relationship between corporate governance and environmental responsibility in listed companies in Sri Lanka.
3. To examine the relationship between corporate governance and economic responsibility in listed companies in Sri Lanka.

In terms of empirical importance, this study shows that most research in this area has been done in many other nations, but no research has been done in Sri Lanka. In terms of studies, there is a dearth. This study is expected to fill the empirical gap in relevant areas.

2. LITERATURE REVIEW

Corporate social responsibility

In the last several decades, the idea and meaning of corporate social responsibility (CSR) have changed dramatically. Carroll (1979), one of many academics who have researched the topic, described CSR as follows: "The social responsibility of business includes the economic, legal, ethical, and discretionary obligations that society has on companies at any particular time." Later, in the form of a four-layer pyramid, the author offered the four components of CSR: economic, legal, ethical, and discretionary. The economic reason for profitability is put at the bottom of the pyramid as the fundamental duty, in order of importance. The legal duty of following the law comes next, followed by the ethical responsibility of doing what is right, just, and fair while avoiding damage. The philanthropic duty of being a good corporate citizen by giving resources to the community and enhancing the quality of life is at the summit of the pyramid (Carroll, 1979).

Corporate social responsibility (CSR) has grown in vital interest internationally and domestically. As globalization increases, corporate social responsibility (CSR) advantages are becoming more widely acknowledged in different countries where these companies operate. As a result, academics, corporate executives, researchers, consultants, and media reporting on companies' excellent and negative contributions to society are becoming more interested in the CSR idea (Crane and Matten, 2004).

Corporate governance

According to Shleifer and Vishny (1997), corporate governance is the process through which businesses ensure they will receive a return on their investment. Furthermore, Gillan and Starks (2000) describe corporate governance as the set of laws, regulations, and variables that regulate a company's activities from a comprehensive viewpoint. Corporate governance (CG) does not have a universally accepted definition. However, the most common definition is the system by which organizations are directed and controlled (Cadbury, 1992). Simply CG means a collection of rules, processes, policies, structures, and incentives that guide and regulate a company's management to accomplish general and particular goals.

Corporate governance is the process of rationalizing, directing, controlling, and monitoring businesses. Shareholders, directors, managers, workers, creditors, consumers, the global environment, and the rest of society are all involved in corporate governance, which aims to improve business performance and well-being as a shared objective (Dissa Bandara, 2006) is perhaps the broadest and most comprehensive definition of corporate governance.

Relationship between corporate governance and corporate social responsibility

Board size

According to the Companies Act, every listed business in Sri Lanka must have at least two directors on its board. Consequently, research suggests that the total number of board members may affect directors' responsibilities (Alfraih and Almutawa, 2017). Recent research (Kabir and Thai, 2017) supports this notion, claiming that corporate

governance measures such as board size have a beneficial effect on CSR. Furthermore, Alfraih and Almutawa (2017) stated that the size of the board of directors is linked to the number of voluntary disclosures. According to the literature following hypothesis is proposed

H_1: There is a significant relationship between board size and corporate social responsibility.

Board Independence

According to agency theory, an independent governing board can effectively supervise and monitor the agents' conduct. Furthermore, independent directors represent greater transparency, which leads to increased long-term value. The board's independence is supposed to be favourably related to a greater degree of SP in the stakeholder theory framework since external directors are genuinely less prone to pressure from shareholders and management than internal directors (Jizi et al., 2014). Furthermore, since they are external to the firm, they have a more significant duty to a larger audience and face more considerable reputational risks (Lim et al., 2007; Prado-Lorenzo and Garcia-Sanchez, 2010). According to the literature following hypothesis is proposed.

H_2: There is a significant relationship between board independence and corporate social responsibility

CEO Duality

CEO duality suggests that one person holds the chairman and the CEO positions. When the chairman of the board and the CEO are the same people, it implies concerns with leadership and governance. There will be less room for dialogue if the CEO and chairman are the same people, as well as a restricted range of skills, knowledge, and expertise to draw on, which could impair corporate performance (Shakir, 2009). A CEO who also serves as Chairman is in a unique position to assess his or her own performance. As a result, their ability to conduct independent self-evaluation is dubious (Petra, 2005; Rechner and Dalton, 1990). Prior research in this area found a negative relationship between CEO duality and the amount of CSR disclosures. Companies with CEO duality are more likely to have a lower extent of CSR (Alabdullah et al., 2019). The following hypothesis is offered based on the literature.

H_3: There is a significant negative relationship between CEO Duality and corporate social responsibility.

Women on Board

The presence of more women on corporate boards has been related to a higher level of social responsiveness to measure diversity (Wang and Coffey, 1992; Williams, 2003). Stakeholder management may be improved by meeting a more comprehensive range of customer expectations when more women are on the board (Daily and Dalton, 2003). Companies may make a CSR effort to enhance their socially responsible conduct (Nath et al., 2013). Empirical evidence suggests a positive relationship between women on board and CSR (Hyun et al., 2016). According to the literature following hypothesis is proposed.

H_4: There is a significant relationship between Women on board and corporate social responsibility.

Board Meetings

Board meetings are techniques that directors can use to decide collectively and set the company's direction, resolve any emergent problems, take strategic action, analyze the company's performance, and oversee the company's operations(Ju Ahmad et al., 2017). With the importance of CSR concerns growing, board meetings are likely associated with more CSR responsibilities, such as CSR reporting. According to the literature following hypothesis is proposed.

H_5: There is a significant relationship between board activities and corporate social responsibility.

Sustainability Committee

A sustainability committee is a high-level control structure that analyses the possible impact of sustainability-related risks on attaining primary business objectives(Burke et al., 2019). An SP and a CSR committee have a beneficial relationship because of the theoretical background and common sense (Ricart et al., 2005). No strong agreement has emerged from empirical studies, however. There are positive and negative associations between a sustainability committee and SP in the literature. According to (Mckendall et al., 1999; Rodrigue et al., 2013), environmental infractions and performance are not linked to CSR Committees. According to the literature following hypothesis is proposed.

H_6: There is a significant relationship between the sustainability Committee and corporate social responsibility

3. METHODOLOGY

This study uses stakeholder and resource dependence theories to examine the relationship between corporate governance and corporate social responsibility in listed companies in Sri Lanka. Positivism philosophy and deductive approach were used to develop and test the selected theories and hypotheses of the study. Quantitative research uses descriptive and inferential statistics to examine the study objectives. The current study used a cross-sectional design and questionnaire to obtain primary data from corporate sustainability officers, accountants and managers working in listed companies in Sri Lanka.

The population consists of 289 listed companies in Sri Lanka as of 4th November 2020. The online structured questionnaires were delivered to a random sample of 168 chosen based on morgan criteria. In total, 130 hotels (or 77% of the sample) provided valid responses to the questionnaire, resulting in a sample representative of the target population and free of significant bias. Additionally, this study used secondary data for the independent corporate governance variable to collect data. The data was collected from the annual report from 2019 to 2020, one year from the 130 listed Sri Lanka companies.

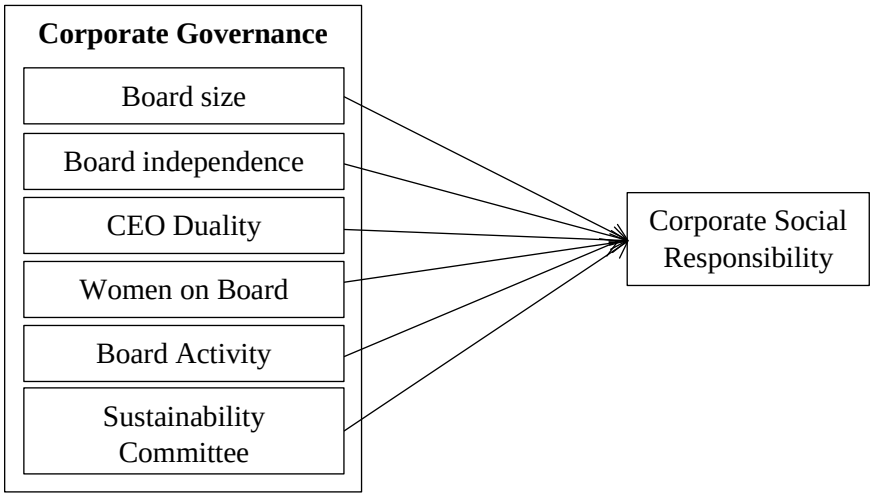

Figure 1: Conceptual Daigram

The operationalisation of variables is illustrated in Table 1.

Table 1: Operationalization of Variables

Variable	Acronym	Description	Reference
Independent Variable- Corporate Governance			
Board size	BSIZE	Number of directors on the board-log	(Hussain et al., 2018)
Board independence	BIND	Control and monitor the Board of Directors' agents' activities.	
CEO Duality	CEOD	Two different people should hold the chairman of the board of directors and the CEO.	
Women on board	WMOB	Numbers of women in the board-log	
Board Activities	BA	Key policy and procedure execution -log	
Sustainability Committee	SC	Develop and plan the CSR activities of the company	
Dependent Variable – Corporate Social Responsibility			
Economic	ECONOMIC	Increase the financial performance of the company. (Ten Questions)	(Turker, 2009)
Social	SOCIAL	Enhance the social performance of the company. (Nineteen Questions)	
Environment	ENV	Environment protection activities. (Thirteen Questions)	

This study used perceptual measures and customized (Turker, 2009) instruments to quantify CSR. Ten questions related to the economic dimension, nineteen questions measured social CSR, and thirteen assessed environmental CSR. Responses were

measured on a five-point Likert scale (1 = ‘‘strongly disagree’’ to 5 = ‘‘strongly agree’’). Confirmatory Factor analysis and Composite reliability analysis are conducted to ensure the validity and reliability of the questionnaire. CSR score is obtained by the average economic, social, and environmental scores. Initial sub-scores were calculated using the average of scores of all questions.

Research Model

This study employs the following CSR model to examine the hypothesis that a significant association exists between corporate governance components and the CSR level.

$$CSR = \beta_0 + \beta_1 BSIZE + \beta_2 BIND + \beta_3 CEOD + \beta_4 WMOB + \beta_5 BA + \beta_6 SC + \varepsilon \ldots\ldots (01)$$

$$ECO = \beta_0 + \beta_1 BSIZE + \beta_2 BIND + \beta_3 CEOD + \beta_4 WMOB + \beta_5 BA + \beta_6 SC + \varepsilon \ldots\ldots (02)$$

$$SOC = \beta_0 + \beta_1 BSIZE + \beta_2 BIND + \beta_3 CEOD + \beta_4 WMOB + \beta_5 BA + \beta_6 SC + \varepsilon \ldots\ldots (03)$$

$$ENV = \beta_0 + \beta_1 BSIZE + \beta_2 BIND + \beta_3 CEOD + \beta_4 WMOB + \beta_5 BA + \beta_6 SC + \varepsilon \ldots\ldots (04)$$

After checking all the assumptions, regression analysis tests the relationship between independent and dependent variables.

4. FINDINGS AND DISCUSSION

Although we measured the constructs using well-established instruments, this study used Confirmatory Factor Analysis to assess their dimensionality and validity in Sri Lanka. All items achieved factor loadings between 0.60 and 0.90 in this Four-factor model (Kline 2011). Additionally, this study examined the three sub-dimensions of convergent and discriminant validity. For all three sub-dimensions, the average variance extracted (AVE) was greater than the recommended value of 0.50, indicating satisfactory convergent validity. Discriminant validity was established because the AVE for each construct was greater than any squared correlations.

Reliability of Measurement

Finally, the three constructs demonstrated a high degree of internal consistency and reliability, with Cronbach alpha values 0.903 for economic CSR, 0.931 for environment CSR, and 0.954 for social CSR, all of which are greater than the 0.7 recommended value (Nunnally 1978).

In terms of corporate governance, independent directors make up 37.75 per cent of the board, while female directors make up 9.52 per cent. Even though independent directors are well-represented, women on boards in emerging market economies remain low. The average number of board directors is 8.22, CEO duality is 64%, and 56% of the companies in our sample have a CSR committee.

Table 2: Descriptive Analysis

	Minimum	Maximum	Mean	Standard Deviation
BSIZE	4	16	8.220	2.582
BINDP	0	82	37.750	12.719
CEOD	0	1	0.640	0.482
WMOB	0	57	9.52	11.957
BA	2	18	6.21	3.582
SC	0	1	0.56	0.498
ECO	1.5	5	3.98	0.726
SOC	1.05	5	4.035	0.723
ENV	1.17	5	3.936	0.754

The descriptive statistics of the dependent variables are exhibited in Table 2. The ENV score ranges from 0 to 5 points, with an average of 3.936 (approximately 79 per cent). The SOC score ranges from 0 to 5 points, with an average value of 4.0350 points (approximately 80 per cent). In addition, ECO scored an average of 3.977 (approximately 80 per cent).

Correlation analysis

Table 3: Correlation

Variables	VIF	BSIZE	BINDP	CEOD	WMOB	BA	SC
BSIZE	1.217	1					
BINDP	1.224	0.061**	1				
CEOD	1.058	0.012	-0.115	1			
WMOB	1.16	0.133	-0.115	0.012**	1		
BA	1.174	0.139	-0.115	0.012	0.133	1	
SC	1.043	-0.058	-0.115	0.012	0.133	0.139	1
CSR		0.079	-0.115	0.012	0.133	0.139	-0.058

****Significant at 1%; **Significant at 5%; *Significant at 10%*

Table 3 contains the correlation matrix. According to the matrix figures, none of the coefficients is more significant than 0.8, indicating that they do not raise multicollinearity concerns. In addition, we computed the variance inflation factor (VIF) for each variable. According to previous research, a VIF more significant than 10 causes multicollinearity problems (Belsley, 1989). As shown in Table 3, no VIF exceeds 10, indicating no concerns about multicollinearity.

Multiple regression analysis

Table 4 summarizes the results of all models. Model 1 investigates how corporate governance variables affect CSR in Sri Lanka. In addition, models 2, 3, and 4 investigate the impact of corporate governance variables on Economic CSR, Social CSR, and Environmental CSR, respectively.

In Models 1,3, and 4, Board Size exhibits the expected sign and is statistically significant. Thus, we have to accept H_1. The Larger board size encourages total CSR and economic, social, and environmental CSR. An increase of 1% in the board size causes a 1.823% increase in total CSR, 1.404% in economic CSR, 2.089% in social CSR, and 1.976% in environmental CSR. These findings support that Larger boards

can be more effective because monitoring managers can spread among more people. In addition, larger boards can also help businesses get more resources, like how much money they get from outside sources (Kabir, 2017).

Table 4: Results of Regression

Variable	(1)	(2)	(3)	(4)
BSIZE	1.823**	1.404	2.089**	1.976**
BINDP	-0.012	-0.012	-0.008	-0.017**
CEOD	-0.041	-0.040	-0.026	-0.058
WMOB	1.216**	0.967**	1.368**	1.312**
BA	0.377	0.437	0.321	0.372
SC	0.134	0.103	-0.004	0.302
Constant	0.928	1.530	0.478	0.774
R Squared	0.174	0.114	0.172	0.234
F Statistic	2.043**	1.248	2.011**	2.951**

****Significant at 1%; **Significant at 5%; *Significant at 10%*

Model 1, 2, and 3 provide the findings for H_2, which posits that board Independence does not affect CSR, economic CSR, and Social CSR but effect environmental CSR. Thus, we have to partially accept H2 that there is a significant relationship between board independence and CSR. However, it does not appear that having independent directors on a board aids or hinders efforts to increase transparency in corporate social responsibility (CSR) (Rashid, 2021).

Model 1,2, 3 and 4, investigate the relationship between CEO duality and the extent of CSR, economic CSR, and Social CSR and find a positive but insignificant coefficient of CEO duality in four models. In other words, CEO duality has no effect on CSR for sample companies. Therefore there is no evidence to support H3. The reason that may be behind here is that the practice of choosing the CEO and chair from the same family has reduced the corporate governance mechanism of CEO/chair duality to a mere ritual (Khan et al., 2013).

Women on board and corporate social responsibility have a positive relationship in the four models. Thus, we have to accept that H_4. The higher presence of women directors on the board encourages total CSR and economic, social, and environmental CSR. An increase of 1% in the WMOB causes a 1.216% increase in total CSR, 0.967% in economic CSR, 1.368% in social CSR, and 1.312% in environmental CSR. Having more women on the board will help the social strategy of businesses and maybe because women are more aware of the importance of Corporate Social Responsibility (Williams, 2003).

According to Table 4, board activities and corporate social responsibility have no relationship in the four models. The number of board meetings does not appear to be a significant factor in explaining the extent of CSR, most likely because the board of directors is only responsible for CSR policy, not for CSR implementation, which is almost certainly the most time-consuming element (Giannarakis, 2014).

According to the study findings, the sustainability committee and corporate social responsibility have no relationship. Directors' sustainability committees, such as environmental governance mechanisms, ensure that people think the company is

doing an excellent job with the environment. This results in no relationship with the Sustainability Committee and CSR.

5. CONCLUSION

This study examined the influence of corporate governance on Corporate Social Responsibility using stakeholder and resource dependence theories with a sample of130 listed companies at CSE. Using Multiple regression study found a significant positive relationship between board size, female representation on the board with CSR, and no relationship between board independence, CEO duality, Board activity, and CSR committee with Corporate Social Responsibility. The current study's findings and arguments are compatible with prior findings and arguments made by stakeholder and resource-dependence theorists.

The positive relationship between female board members and CSR is consistent with the resource dependence theory assumption. However, CEO duality and board independence were not statistically significant concerning CSR, despite exhibiting a slightly negative relationship. In addition, board activity and sustainability committee were not statistically significant concerning CSR, despite exhibiting a slight positive relationship.

This study has several important implications. Initially, authorities in emerging market countries should consider the advantages of having female directors on boards of directors, given their favourable influence on various business decisions. Thus, legislators in developing market nations issue recommendations or enact legislation regarding women's presence on the board of directors.

Secondly, these findings could help practitioners, investors, and other stakeholders in emerging economies. Investors who care more about environmental and social issues may be interested in investing in firms with women directors and large board sizes, given their positive impact on CSR. Other stakeholders can pressure companies to improve their CSR by focusing on particular women's presence and large board size. Additionally, practitioners may be interested in cooperating with businesses that address social and environmental challenges.

Finally, scholars should undertake additional research on this subject. New findings may offer insight into the efficacy of some corporate governance measures in Sri Lanka, which have the potential to become critical instruments for enterprises to improve CSR. In this manner, businesses can meet the demands and wants of all stakeholders. As a result, future studies would conduct additional corporate governance techniques not covered in our paper.

This article can serve as a springboard for future studies. It would be interesting to investigate the corporate governance index's impact on corporate social responsibility. Additionally, creating a broad corporate social responsibility instrument measure is recommended using the questionnaire survey and annual report data using the triangulation method. Finally, it is crucial to conduct mixed-method research to follow up on the findings.

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FACTORS AFFECTING ACADEMIC PERFORMANCE OF UNDERGRADUATES: CASE STUDY IN A STATE UNIVERSITY OF SRI LANKA

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ABSTRACT

The main concern of this research is to identify the factors affecting the academic performance of undergraduates at a state university in Sri Lanka. Specifically, the study identifies the effect of the students' lecture attendance, English knowledge, time spent studying, family background, and self-motivation on academic performance. The author used a questionnaire survey as the data collection method and used a quantitative research approach. The sample related to this study is 348 undergraduates representing all six faculties from level 2 to level 4. Level 1 students were not considered since they had not received their semester results at the time of data collection. The analysis is conducted using the Statistical Package for Social Sciences (SPSS) software. Descriptive statistics, reliability analysis, normality, linearity, and multi-collinearity were conducted as preliminary statistical analyses. Cronbach's Alpha was used to assess the reliability of the questionnaires. Moreover, correlation analysis and multiple regression analysis were conducted by the author to address research questions/hypotheses. It was found that self-motivation, lecture attendance, time spent studying, and English knowledge of the students positively and significantly affect academic performance. Among these factors, self-motivation was the most influential factor in academic performance. It was found that students' family background does not affect academic performance. The purpose of this study was to identify the factors influencing the academic performance of undergraduates at a state university in Sri Lanka, and the findings will be used to provide a guide for undergraduates to improve their academic performance. Furthermore, these findings will assist lecturers and administration in observing and taking necessary steps to improve academic performance at this Sri Lankan state university.

Keywords: Academic Performance, A State University of Sri Lanka, Undergraduates, University Education,

1. INTRODUCTION

Education is a critical issue to address because it is the primary means of acquiring knowledge, skills, values, and capabilities. Proper education directly impacts a country's development; thus, maintaining an effective education system in a country is mandatory, and university education takes center stage when discussing country development and education. Because university students are the primary source of human capital, academic performance among university students is a hotly debated topic.

Governments spend more money on education, especially in Sri Lanka, where we have a free education system that is fully funded by the government. As a result, educators and other education authorities must ensure that value for money is prioritized and that government investment is at least equal to students' academic achievements. The disparity between these two aspects will indicate a flaw in educational standards. And it will have a negative impact on the country's development. As a result, paying close attention to undergraduate performance is essential. It is critical to identify factors influencing academic performance in order to reduce students' negative/low academic performance. Based on the findings, actions can be taken to improve academic performance while reducing poor academic performance. As a result, this study is being conducted to identify factors influencing undergraduate academic performance.

Academic success (academic achievement) of students is critical in producing the highest quality graduates who will serve as outstanding leaders and workforce for the country and thus be accountable for the country's economic and social development (Ali et al., 2009). To improve the quality of the university's output, special attention must be paid to the performance of its students. Because, as soon as they graduate, they become the primary source of labour in the economy. The academic performance of university students is a major determinant of their career and future success. As a result, studying factors influencing university students' academic performance is prevalent.

Thanks to the gift of free education, Sri Lanka has 17 government universities, and admission to government universities is highly competitive, limited, and standardized. As a result, undergraduates have been dubbed "the cream of the nation." Each year, less than 16% of students are admitted to the 15 state universities based on G.C.E Advance Level (A/L) examination z- score and population relating to each district university cut-off. As a result, in order to enrol in a government university, students must obtain a high A/L grade.

However, once enrolled in university, students' academic performance varies greatly. In the worst-case scenario, the majority of students do not realize the true value of higher education. Some students receive lower grades, have higher dropout rates, must repeat and drop out of university, or graduate with a general pass. Lower grades had a negative impact on students' overall performance, career, and labour demand in the future. As a result, identifying and addressing factors influencing academic performance is beneficial to students, academic staff, policymakers, parents, and society. Factors influencing the academic performance of university undergraduates will be observed and evaluated in this study. This study will make use of students from a Sri Lankan state university. As a result, the researcher determined that it is critical to study undergraduate academic performance because only a few studies have looked into this aspect and even fewer in Sri Lanka.

The author conducted the research after thoroughly reviewing existing research in the field, and it has come to the author's attention that the factors influencing undergraduate academic performance in this Sri Lankan state university. Many researchers around the world have addressed the issue of undergraduate performance.

The majority of studies have been conducted using the Cumulative Grade Point Average (CGPA) as a measure of academic performance and provide recommendations for improving academic performance. The author of the current study is attempting to address some other items to measure academic performance in addition to GPA.

The impact of determinants on university students' academic performance has been the subject of ongoing discussions in Sri Lanka among educators and policymakers. Students' academic performance will suffer as a result of poor grades. It will also have a negative impact on their overall performance, degree class, career, employment, and social status. This research is primarily concerned with the causes of poor academic performance. The main issue here is that students performed admirably in receiving entry qualifications with high marks, but only about 10% of them maintain their previous level of performance. As a result, the current study investigates factors influencing the academic performance of undergraduates at a state university in Sri Lanka. The primary goal is to identify the most important factors influencing undergraduate academic achievement.

As soon as they graduate, undergraduates become the primary source of the workforce. If they do not succeed in their academic performance at the university, it will have a negative impact on their future. If they drop out of university, they will have a difficult time finding work in the labour market. This, however, will lead to societal issues such as young dissatisfaction, stress, and anti-government actions. Furthermore, this situation limits employment and, as a result, has an impact on the country's economic development. As a result, academic performance among university students receives the most attention because it is a national issue affecting students, academics, administrative personnel, politicians, and development practitioners. As a result, determining the factors influencing undergraduate academic success will aid in resolving this issue.

Finally, this study will be beneficial to a wide range of parties. Undergraduates are the primary beneficiaries. The findings of this study will help to improve undergraduate performance by addressing the factors that influence academic performance. Throughout this study, the actual reasons for the undergraduates' academic performance can be determined. Under this setting, the impact of lecture attendance, students' English knowledge, studying time, family background, and self-motivation on academic performance can be identified. Following that, the university's academic and administrative staff can directly apply the research findings to improve the efficiency and effectiveness of academic programs. The findings of this study would also be useful to policymakers and development practitioners. They would ensure that the government's limited resources were used efficiently and effectively. And to address the flaws in the current educational system. This research study also contributes to our understanding of academic performance in higher education institutions and practice in developing and managing higher education programs.

To the best of the author's knowledge, no previous research has been conducted that evaluates the factors influencing undergraduate academic achievement at a Sri

Lankan state university. This will be the first study of its kind in this field. As a study based on factors influencing undergraduate academic performance, the author believes this research will help close a literature gap. The primary goal of this study is to identify factors influencing the academic performance of undergraduates at a Sri Lankan state university.

Furthermore, there are five specific objectives: the first is to determine whether students' lecture attendance affects academic performance, the second is to determine whether students' English knowledge affects academic performance, the third is to determine whether time spent on studying affects academic performance, the fourth is to determine whether students' family background affects academic performance, and the fifth is to determine whether students' self-motivation affects academic performance.

2. LITERATURE REVIEW

The author conducted a review of studies on this topic that were relevant and valid. Undergraduate academic performance and factors that affect academic performance are researched to provide a conducive environment for the study to continue. Another term for academic performance is academic achievement. "Academic performance is the assessment of student achievement in a variety of academic subjects" (Anon., 2021). Furthermore, Banquil et al. (2009) define academic performance as "how students deal with their studies and how they cope with or accomplish various tasks assigned to them by their teachers" (Fernando, 2017).

The academic performance serves as an evaluative system and a source of information for educational institutions. Previous studies used CGPA, test scores, and grades to assess academic performance. GPA/CGPA has been used in many studies to assess academic performance (Fernando, 2017; Priyadarshan and Kumari, 2020; Harb and El-Shaarawi, 2006; Mushtaq and Khan, 2012; Ali et al., 2009; Ghenghesh, 2015; Plant et al., 2005; Hedjazi and Omidi, 2008). Some studies used test scores/grades (Ali et al., 2013; Kyoshaba, 2009; Aina et al., 2013).

Some studies, however, did not use either of the above and instead used other indicators to assess academic performance. Ansari et al. used a 5-point Likert Scale to assess academic performance using two indicators. They are students' internal reflections on their academic performance as well as their subjective comparative assessment of their overall academic performance (Ansari et al., 2020). Ainin et al. (2015) investigated Facebook usage, socialization, and academic performance in 2015 using the 5-point Likert Scale to assess academic performance with two items. They have used phrases such as, "I am confident in the adequacy of my academic skills and abilities, and I feel competent conducting my course assignments".

The study investigated whether students' attendance at lectures improved their academic performance. Many researchers have identified lecture/class attendance as an important factor influencing students' academic performance.

Fernando (2017) investigated the factors that influence academic performance among undergraduates at the Faculty of Management Studies and Commerce of the University of Sri Jayawardhanapura. A structured questionnaire was used to collect responses from 200 students. According to the findings, students' attendance at lectures has a positive and significant (p 0.001) impact on academic success. A student who attends the majority of classes believes that doing so will help him or her get better grades. Priyadarshana and Kumari (2020) conducted a similar study on 91 graduate students from the Faculty of Management Studies and Commerce at the University of Sri Jayawardhanapura in Sri Lanka. The main analytical tools employed in this study were correlation analysis and multiple regression analysis. Findings show a positive correlation between lecture attendance and academic performance and that lecture attendance is a significant factor when evaluating academic performance. The relevance of interactive learning was demonstrated by the considerable positive link between lecture attendance and GPA. Cheung and Kan (2002) backed up their findings by stating that attending lectures and tutorials is very important for achieving a decent grade on the final test.

Stanca (2014) used panel data to investigate the effect of attendance on academic performance for Introductory Microeconomic students at the University of Milan. According to a 766-student study, attendance has a positive and significant impact on academic performance (Stanca, 2014). Harb and El-Shaarawi investigated factors influencing student performance using 864 students from the College of Business and Economics at the United Arab Emirates University. The study concluded that missing too many lectures has a negative impact on student's performance. According to the study, missing too many lectures is the most important factor that has a negative impact on student's performance (Harb and El-Shaarawi, 2006).

Many studies have found that knowing English has a significant impact on academic performance (Fernando, 2017; Priyadarshana and Kumari, 2020; Harb and El-Shaarawi, 2006; David, 2014; Fakude, 2012; Aina et al., 2013; Ghenghesh, 2013). Ali et al. (2013) evaluated the factors influencing students' academic performance using a sample of 100 students from Islamia University Sub Campus. Using a linear regression model, correlation analysis, and descriptive analysis, this study discovered that daily study hours significantly impact graduate students' academic performance.

Yogendra (2017) investigated the factors influencing GPA in third-year commerce and management students at Eastern University in Sri Lanka. A high level of GPA is obtained by devoting a significant amount of time to studies. Furthermore, according to the researchers, efficient time spent studying allows students to work their way through their studies in a systematic manner, breaking tasks down into smaller, more easily accomplished sub-tasks. In any case, Yogendra (2017) reports a lack of academic research on the effect of studying on academic performance has been reported by Stinebrickner (2007). Yogendra (2017) discovered that family background has a significant impact on academic performance. However, many previous studies examined parents' income and education level to examine family background.

According to Ali et al. (2009), students from higher-income families outperform those from lower-income families in academic assessments. Similarly, Checchi (2002) discovered that wealthier parents invest more in their children's education. The study of factors influencing students' academic performance at Islamia University Sub Campus discovered that fathers/guardians' socioeconomic status has a significant impact on academic performance. The study discovered a positive relationship between income and student performance, implying that high-income parents are to blame for their children's high test scores (Ali et al., 2013).

Kyoshaba (2009) investigates the factors influencing undergraduate student performance at Uganda Christian University. The data collected from three hundred and forty (340) respondents were analyzed using a correlation in the study. The data showed a link between parents' socioeconomic status and their children's academic performance. Furthermore, data show that the higher a parent's socioeconomic status, the higher their children's academic performance. Parental education, family income, and parental occupation were used to determine parents' socioeconomic status. Furthermore, the study suggests that parents' socioeconomic status is important because they provide high levels of psychological support for their children by creating conditions that promote the development of abilities required for academic achievement.

According to a study of factors influencing an agricultural student's academic success at the University of Tehran, there is a significant positive correlation between motivation and student academic success. This study was carried out using the responses of 94 junior undergraduate students, and data was collected using questionnaires. It also concludes that motivation is an important factor in student's academic success (Hedjazi and Omidi, 2008). Fernando (2017) also discovered a significant (p 0.01) and positive relationship between self-motivation and academic success. This study chose four items to dig deeper into self-motivation. Specifically, I can deal with exam stress, manage my academic workload, enjoy lectures in my degree, and am interested in the majority of the courses I am taking. In this study, these four items explained 56.883 total variations in the concept of self-motivation. Finally, this study discovered that self-motivation is a predictor of academic performance.

Almalki (2019) conducted a study to determine the effect of motivation on academic performance among undergraduate dentistry students. A cross-sectional survey of 187 undergraduate dentistry students from the main dental colleges in Saudi Arabia's Riyadh region was conducted using an electronic questionnaire. In this study, the Motivated Strategies for Learning Questionnaire (MSLQ) was used to assess motivation, and the results revealed a positive relationship between academic performance and motivation. Furthermore, the study discovered that the eagerness to learn influences the academic performance of dentistry students.

3. METHODOLOGY

Because the concept is derived from the reviewed literature, this study takes a deductive approach by using the positivism philosophy. The author decides to collect

data only from questionnaires sent to undergraduates in order to determine the factors influencing academic achievement. As a result, the current study can be classified as a single-method quantitative study. Morgan's Table was used to determine the research sample size of 348.

The conceptual framework depicts the factors influencing undergraduate academic performance (Figure 1). As a result of an extensive literature review, the author identified five independent variables (lecture attendance, students' English knowledge, time spent studying, family background, and self-motivation).

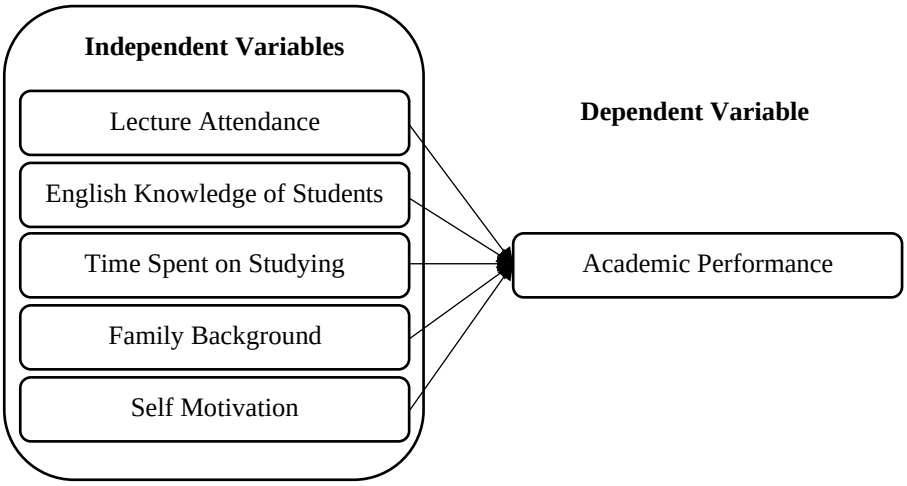

Figure 4. Conceptual Diagram

Moreover, to address developed research questions author develops a hypothesis.

H1: There is a significant effect of students' lecture attendance on academic performance

H2: There is a significant effect of the f English knowledge of the students on academic performance.

H3: There is a significant effect of time spent on studying on academic performance

H4: There is a significant effect of students' family background on academic performance

H5: There is a significant effect of self-motivation of the students on academic performance

These hypotheses were analysed using descriptive statistics, preliminary statistics, and inferential statistics techniques via SPSS.

4. FINDINGS AND DISCUSSION

The survey was sent to 348 university undergraduates from six faculties, ranging from level 2 to level 4. The study received responses from 34% of male students and 66% of female students. These responses included 30% level 2 undergraduates, 30% level

3 undergraduates, and 40% level 4 undergraduates. In addition, respondents came from all faculties. Based on a sample of 348 students, 13 per cent were from Applied Science, 19 per cent were from Agriculture and Plantation Management, 11 per cent were from Livestock, Fisheries and Nutrition, 42 per cent were from Business Studies and Finance, 12 per cent were from the Faculty of Technology, and 2 per cent were from the Faculty of Medicine. The reliability of the surveyed data was first tested using Cronbach's Alpha, which demonstrated that the data has an acceptable level of internal consistency. Pearson Correlation analysis was used to assess the relationship between independent and dependent variables.

Table 16. Correlation Table

	AP	**LA**	**EN**	**TS**	**FA**	**SM**
AP	1	0.467**	0.372**	0.394**	0.184**	0.546**
		(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
LA	0.467**	1	0.229**	0.437**	0.233**	0.314**
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)
EN	0.372**	0.229**	1	0.056	0.405**	0.359**
	(0.000)	(0.000)		(0.296)	(0.000)	(0.000)
TS	0.394**	0.437**	0.056	1	0.015	0.302**
	(0.000)	(0.000)	(0.296)		(0.776)	(0.000)
FA	0.184**	0.233**	0.405**	0.015	1	0.068
	(0.001)	(0.000)	(0.000)	(0.776)		(0.209)
SM	0.546**	0.314**	0.359**	0.302**	0.068	1
	(0.000)	(0.000)	(0.000)	(0.000)	(0.209)	

Using regression analysis, the overall impact of all independent variables on academic performance was determined. In addition, the outcome was useful in deciding whether to accept or reject the derived hypothesis. The author created a model that includes all independent variables and has an R-value of 0.664, indicating a moderate correlation between dependent and independent variables. The R square value was determined to be 0.441, with a statistical significance of P0.05. This means that 44.1 per cent of academic performance variations are predicted by lecture attendance, students' English knowledge, time spent studying, family background, and self-motivation.

Based on the significant values in table 2, it is possible to conclude that lecture attendance, students' English knowledge, time spent studying, and self-motivation all have a significant positive impact on academic achievement. These findings are consistent with those of Fernando (2017), Priyadarshana and Kumari (2020), Harb and El-Shaarawi (2006), David (2014), Fakude (2012), Aina et al. (2013), Ghenghesh (2015), Ali et al. (2013), and Yogendra (2017). Furthermore, the findings show that self-motivation is the most important variable. According to the findings of the study, the family background does not affect academic performance. It contradicts the findings of Ali et al. (2009) and Kyoshaba (2010).

Table 2. Coefficient Table

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	1.227	0.150		8.205	0.000	0.933	1.521
LA	0.125	0.026	0.231	4.858	0.000	0.075	0.176
EN	0.115	0.033	0.166	3.478	0.001	0.050	0.179
TS	0.122	0.032	0.175	3.789	0.000	0.059	0.185
FA	0.029	0.036	0.036	0.805	0.422	-0.042	0.100
SM	0.249	0.032	0.358	7.738	0.000	0.186	0.312

a. Dependent Variable: Academic Performance

5. CONCLUSION

The primary goal of this study was to identify the factors influencing the academic performance of undergraduates at Sri Lanka's A state university. Furthermore, this study adds to the existing body of knowledge on academic performance. The survey was sent to 348 state university undergraduates. The dependent variable in the study was academic performance, and the five independent variables were drawn from the existing literature. Students' attendance at lectures, English knowledge, time spent studying, family background, and self-motivation are independent variables in this study.

For the study, a questionnaire was used to collect data from 348 undergraduates at the state university. The questionnaire had three main sections: demographic factors, independent variables, and dependent variables. The author used a Likert scale and yes/no questions to collect data. SPSS software was used to analyze the collected data. Descriptive statistics, preliminary statistical analysis, and inferential statistics were used to test the study's hypotheses. The results of the correlation and regression analyses aided in achieving the study's ultimate goal. According to the findings, there is a significant positive effect of lecture attendance, students' English knowledge, time spent studying, and self-motivation on the academic performance of undergraduates at a Sri Lankan state university.

This study on factors influencing the academic performance of undergraduates at Sri Lanka's A state university highlights the survey results in a precise manner, achieving the study's specific objectives. Students' attendance at lectures has an impact on their academic performance. This study discovered that attending lectures significantly positively affects academic performance. Students' English proficiency has an impact on their academic performance. According to the findings, it is possible to conclude that students' English knowledge has a significant positive effect on their academic performance.

Academic performance is influenced by the amount of time spent studying. Time spent studying has a significant positive effect on academic performance. Academic performance is unaffected by a student's family background. According to the authors' findings, family background has a negligible positive effect on academic

performance. Students' self-motivation has an impact on their academic performance. Based on the findings, the author concludes that self-motivation has a significant positive effect on academic performance. Furthermore, self-motivation is the most important factor influencing academic performance.

Furthermore, the study's findings demonstrated that all research questions were correctly answered. The author also met the research objectives to identify factors influencing undergraduate academic performance. Finally, the researcher's overall study can conclude that independent variables (lecture attendance, students' English knowledge, time spent studying, and self-motivation) are significantly positively associated with academic performance.

The study looked at the academic performance of undergraduates at a Sri Lankan state university. Based on the findings and conclusion, the author developed the following recommendations to improve academic performance. The most crucial aspect of this research is self-motivation. Students who have a strong sense of self-motivation will achieve more. Undergraduates should also be able to deal with exam stress and academic strain effectively. Furthermore, in order to achieve better academic performance, students must select subjects that are of interest to them. Another factor influencing academic performance is students' attendance at lectures. Undergraduates must attend the majority of lectures and must believe that doing so will help them achieve better academic performance.

Time spent studying is another factor that influences academic performance. In this regard, students must devote more time to studying, and that time must be spent wisely in order to achieve a positive outcome. Another factor influencing students' academic performance is their command of the English language. Students should be able to read, write, speak, and understand English. If this is the case, they may be able to improve academic performance by removing the language barrier.

The study's findings will provide a guide for undergraduates looking to improve their academic performance. Furthermore, these findings will assist lecturers and administration in observing and taking necessary steps to improve academic performance at this Sri Lankan state university.

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IMPACT OF CORPORATE SOCIAL RESPONSIBILITY ON THE FINANCIAL PERFORMANCE: EVIDENCE FROM LISTED MANUFACTURING COMPANIES IN SRI LANKA

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ABSTRACT

Corporate Social Responsibility (CSR) is getting wider attention in the present competitive business environment. However, the relationship between Corporate Social Responsibility and financial performance is still an ambiguous problem for many business organizations. Though several studies are available on CSR and financial performance, the conclusions are vague. Therefore, the objective of this research is to assess the impact of corporate social responsibility on the financial performance of listed manufacturing companies in Sri Lanka. Corporate social responsibility indicated through the aspects of community, customer, employee and environment is taken as the independent variable, while financial performance measured through the return on assets is considered the dependent variable. This study is based on the voluntary disclosures made in the annual reports regarding 25 manufacturing companies registered in Colombo Stock Exchange. The data cover a period of 5 years (2016-2020) to give enough information for the study. Correlation analysis indicates that all the independent variables positively correlate with ROA. According to the regression outcome, CSR activities towards the community and customers have a significant positive impact on financial performance. It indicates that when firms attend to more CSR activities towards the community and customers, it will lead to an increase in the profitability of firms. This may be due to the good image and trust built among the community and customers. However, it is surprising to see a significant negative effect of CSR activities related to employees on the financial performance of listed manufacturing companies. Furthermore, Contribution to the environment with CSR activities has an insignificant impact on the firm's financial performance. In conclusion, CSR activities significantly affect the financial performance of listed manufacturing companies on the Colombo Stock Exchange. Findings are useful for managers to identify the level of resources to be invested in CSR activities to maximize the firm performance. Furthermore, CSR activities of firms signal investors to show that it is highly profitable to invest in a firm that engages in CSR activities.

Keywords: Corporate Social Responsibility, Colombo Stock Exchange, Firm Performance, Profitability, Return on Asset

1. INTRODUCTION

Background of the Study

Corporate social responsibility (CSR) is one of the most popular topics in the present business world. With the introduction of globalization, businesses began to change rapidly, and they looked for a newer concept. When the market becomes competitive, these competitive firms try to engage more unique features to build differentiated, unique innovations to build barriers to new entrants and capture a bigger market share than the current business. The trend of engaging in activities of corporate social responsibility has grown rapidly in the last few years. Because of the Covid-19 situation in Sri Lanka, all the business firms are highly concerned about Corporate Social Responsibility. They follow the government rules, regulations and instructions regarding social well-being and healthiness.

In the past, a company's ultimate objective was to achieve profits, and the shareholders were the only party towards which the company had responsibilities. Therefore, the ultimate objective of financial management was to maximize shareholder wealth (Tilakasiri, 2012). The contemporary business world is moving towards expanding and fulfilling the objectives of all stakeholders. They not only focus on profit but gradually adapt to the different types of new trends in the market. As such, the ultimate purpose of companies is to focus more on satisfying the needs of all stakeholders while reaching satisfactory levels of profit. Therefore, business companies attempt to play a new role to be able to take care of both social and environmental aspects while gaining an adequate level of profit. For that reason, corporate social responsibility is becoming an emerging area within the scope of accounting.

Regarding society, employees and the situation since their prospects are wider than the profits. CSR is normally interrelated with other terms, such as corporate citizenship and the triple-bottom-line concept theory. CSR is described as actions that appear to further some social good beyond the interest of the firm and that which is required by law (McWilliams & Siegel, 2001). Many companies are accountable for using CSR issues because shareholders, analysts, regulators, activists, labour, unions, employees, community organizations and the general public always ask whether they are adopting those issues (Tsoutsoura, 2004).

Research Problem

The concept of Corporate Social Responsibility has been developed in Western countries since the 1950s. Various CSR frameworks, standards and principles have grown significantly as researchers expand the concept in the business world. However, the relationship between CSR and financial performance is still a cryptic problem for many business organizations. In Sri Lanka, this issue is under-researched as a developing country (Tilakasiri, 2012). There are some studies relevant to CSR but the findings are indefinite (McWilliams and Siegel, 2001). While some

researchers find a positive and negative relationship, others find no/neutral relationship between CSR and financial performance (Classon and Dahlstrom, 2006). The firms do not address the needs of other stakeholders. As they wish to increase the shareholders' wealth, they always try to increase the performance and through it, they wish to retain enough retained earnings and return on assets to strength the future operations of the company. Therefore, they do not like to block those earnings on implementing CSR activities which do not receive short-term benefits. Those CSR activities are not attached to monetary terms. By applying CSR practices, firms' can enhance their popularity (Barnett and Salomon, 2006).

But when concerned about the market situation, to survive in the market in the long run, a firm should attain a satisfactory level of profit which can satisfy the stockholders, needs while satisfying the needs of other stakeholders. Therefore, firms should pay special attention to satisfying the needs of stakeholders. The problem of the study is to identify the significant association and the relationship between Corporate Social Responsibility (CSR) and financial performance (Tilakasiri, 2012).

Research Objectives

The objective of corporate social responsibility is to satisfy the current social expectations rather than satisfy the expectations of the shareholders. So, there is a matter of whether this affects the financial performance of an entity. Otherwise, the cost of corporate social responsibility might be in vain. Financial performance would be measured using return on assets (ROA) as the dependent variable. Under this research, corporate social responsibility disclosure is measured by identifying different corporate social responsibility activities performed by the manufacturing companies based on the community, customer, employee and environment as independent variables.

The ultimate objectives of this research are,

- To evaluates the relationship between corporate social responsibility and financial performance.
- To assess the impact of corporate social responsibility on the financial performance of listed manufacturing companies in Sri Lanka.

Significance of the Research

This study illustrates how companies manage the business process to produce an overall positive impact on society. It is essential for management to manage their overall strategies in the business profitably. This study facilitates filling the research gap regarding Corporate Social Responsibility and Financial Performance in the Sri Lankan context.

It can be summarised the following benefits for a company of being socially responsible: (1) it is easier to attract resources; (2) it can obtain quality employees; (3) it is easier to market products and services; (4) it can create unforeseen

opportunities; and (5) it can be an important source of competitive advantage (Barnett and Salomon, 2006).

The CSR policies address more and more non-monetary benefits. Firms are ignoring the adoption of those activities because the benefits of CSR are not visible, and it cannot measure in monetary terms, and basically, it is affected the long run of the firm. Because of that, the firms are not concerned about those and close their eyes. Therefore, this research is based on filling the knowledge gap in the Sri Lankan context. The findings of the present study are useful to the managers to identify the level of resources to be invested in those kinds of activities to get the maximum level of performance. For investors, they can identify the industry in which they should invest the money.

2. LITERATURE REVIEW

Corporate Social Responsibility

CSR is a concept that encourages social responsibilities on a voluntary basis. Although such social activities are not directly related to business, there is an indirect positive impact on the business undertaking them. For example, as a result, the public may have a positive image of the business company, and employee morale may be boosted, which in turn may have a positive effect on the productivity of the company (Ariyabandu and Hulangamuwa, 2002).

According to Classon and Dahlstrom (2006), CSR is the way for a company to get the responsibility of all the stakeholders. As stated by Sims in 2003, CSR requires "the continuing commitment by business to behaving ethically and contributing to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large." And also he stated that every organization has a responsibility to take care of society and enrol on activities which are contributing to the welfare of society. In the contemporary business world, businesses target not only maximizing profit but also operating the business in a socially responsible manner (McWilliams and Siegel, 2001).

Financial Performance

Financial performance is defined as a measure of make income of the business (Damodaran, 2005). Financial performance has been the measurement of success in many entities in the world (Thrun, 2003). The ROA measures not only the profit aspect but also that associated with assets employed to get the profit in the business. If the ROA is broken down, there will be two important measures: profitability ratio (profit margin) and asset turnover ratio. According to Alexander and Buchholz (1978), the key measure is the use of financial ratios in measuring the financial performance of the firm. Firm performance definition focuses on how socially responsible activities effect on firm's market value. Market value is the price of a firm's equity multiplied by the total number of shares (Copeland et al., 1994; Friedman, 1962).

How to measure Corporate Social Responsibility and performance

The importance of measurement is highlighted by Harrington (1987), who notes that "if you can't measure something, you can't understand it; if you can't understand it, you can't control it; if you can't control it, and you can't improve it" (Harrington, 1987). Carroll (2000) stated the question if it's possible to create valid and reliable measures. In addition, it was pointed out how difficult it is to introduce performance measures focused on the corporate outcomes of a company. However, the performance measures cannot be related to output because social concerns cannot be fully controlled by companies; thus, the company should not be considered a less responsible company (Graafland et al., 2003). An important topic of CSR measurement is the sort of CSR measures; the primary sort of CSR measures concerns general things that do not consider the direct and indirect effects of its sector in society (Graafland et al., 2003; Hino, 2001; Turker, 2009), while the second one proposes both general and sector-specific indicators (Azapagic, 2004; Azapagic and Perdan, 2000).

According to McGuire, Sungren and Schneeweis (1988), accounting measures such as return on assets, return on equity and return on sales gives various information regarding the company. Because of that, return on assets is used as the measurement to measure the financial performance of manufacturing companies. As an accounting measure, ROA provides a better forecast regarding CSR than market measures. The net profit percentage is the ratio after-tax to net sales. It reveals the remaining profit after all production, administration, and financing costs have been deducted from sales and income taxes recognized. As such, it is one of the best measures of the overall results of a firm, especially when combined with an evaluation of how well it is used its working capital. The measure is commonly reported on a trend line to judge performance over time. It is also used to compare the results of a business organization with its competitors.

Relationship between Corporate Social Responsibility and Financial Performance

According to Tsoutsoura (2004), there is a positive relationship between CSR and profitability, and it makes a greater contribution to strengthening the past opinion. And he has found that the firm with frozen financial performance has several resources to invest in CSR activities. They are employee relations, environmental concerns and community relations. The firms that are financially fixed can allocate more resources for CSR activities, which helps to improve the brand image and automatically, it is more beneficiary in the long term. Profitability or financial performance directly influences CSR. It is proved that the financial variable is most strongly correlated with CSR within industry groups. And there is a positive correlation between social involvement and profitability (Selvarajh et al., 2011).

3. METHODOLOGY

This study examines the effect of corporate social responsibility on firm performance using a quantitative research approach. Accordingly, the researcher collects numerical data and analyses using mathematical and statistical methods. The conceptual framework was developed based on the predictions made during the hypothesis's development process. Accordingly, this model identifies corporate social responsibility as the independent variable and financial performance as the dependent variable. Hypotheses and Conceptual Framework can be shown as below;

H0: There is no relationship between CSR (community, customer, employee and environment) and the financial performance of a company.

H1: There is a relationship between CSR (community, customer, employee and environment) and the financial performance of a company.

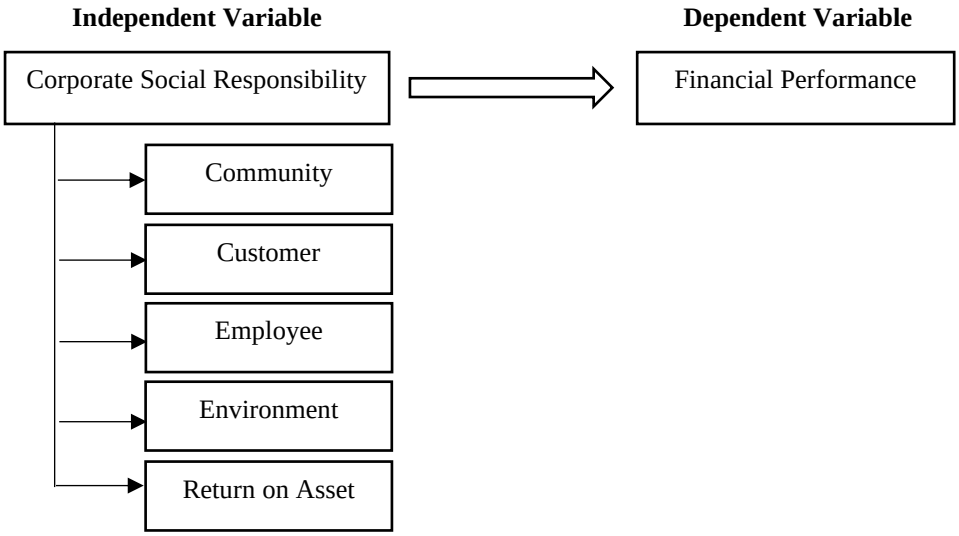

Figure 5 Conceptual diagram

Accordingly, this model identifies corporate social responsibility as the independent variable and financial performance as the dependent variable. Corporate social responsibility is measured by the CSR activities of the company, which includes Community, Customer, Employee and Environment. The financial performance of the company is measured by Return on Assets (ROA).

Research Design

This study has a positivist research philosophy. This quantitative research is conducted based on the secondary data and is highly objective. The secondary data approach facilitates to study of a large data set. These secondary data disclosed from annual reports are more relevant than primary data. The researcher is independent.

And follows the deductive approach. The research study is based on the Explanatory purpose related to hypothesis testing.

Operationalization of Variables

Table 17. Operationalization Table

Variables	Measure	Source
Community Customer Employee Environment	Total score of the dimensions/ Maximum possible score obtainable * 100	(Tilakasiri, 2012)
ROA	Net Profit/Total Asset*100	(McGuire, 1988)

Sample Selection

The study collects information from manufacturing companies listed on Colombo Stock Exchange (CSE). Those selected manufacturing companies are currently applying CSR practices. That is the reason for selecting the listed manufacturing companies as the sample. Out of the 20 industries in CSE, there are 45 manufacturing companies in the manufacturing sector. So, the population is 45 listed manufacturing companies.

The governance rules and regulations to practice corporate social responsibility are lacking in Sri Lanka (Tilakasiri, 2012). This study is based on the voluntary disclosures made in the annual reports regarding the sample of 25 manufacturing companies. The data cover a period of 5 years (2016-2020) in order to give enough information for the study. Sample selection is made by using the random sampling technique in order to reduce the biases of the study. This selection was based on the following criteria. Firms must be listed in CSE before 2016, and the selection of the companies mainly considers the availability of data related to corporate social responsibility and financial performance.

Data Collection

According to the conceptual framework, the independent variable is Corporate Social Responsibility, and the dependent variable is firm performance. The secondary data method is used because the researcher may have fewer resource requirements, such as time and money. The secondary data approach facilitates to study of large data sets. Not only may that, using secondary data results in new, unexpected discoveries (Lanis, 2011).

Data were collected from the audited annual reports and websites of respective firms. The study uses the total asset and net income to compute the return on assets. ROA is used to measure the financial performance of the companies. CSR information was obtained from the sustainability report and corporate social responsibility, which were available on company websites and annual reports. The study focuses on

community, customer, employee and environment to measure the CSR activities of the company. Since this study is based on data obtained from annual reports published by companies, the reliability of the data is high.

Data Analysis Techniques

The study applies more statistical measurements to address the research questions and test the hypotheses developed earlier. Mean values were used to identify the adoption of CSR in the selected industry. The correlation method was used to identify the significance of the association between CSR and financial performance. The regression analysis is used to examine the impact of CSR towards financial performance. Multiple linear regression method was applied to investigate the causal relationship between CSR and Firm performance. The multiple regression equation of the study is developed as follows,

$$ROA = \beta 0 + \beta 1 Community + \beta 2 Customer + \beta 3 Employee + \beta 4 Environemnt + \varepsilon$$

4. FINDINGS AND DISCUSSION

Descriptive Statistics

The descriptive statistics of the variables used in the regression with minimum, maximum, mean and standard deviation values for the period of 2016 to 2020 of the selected sample.

Table 2: Descriptive Statistics

	ROA	Community	Customer	Employee	Environment
Mean	7.824	46.720	72.960	78.880	75.520
Median	6.450	40.000	80.000	80.000	80.000
Maximum	49.390	100.000	100.000	100.000	100.000
Minimum	-18.910	0.000	20.000	40.000	20.000
Std. Dev.	9.752	27.231	17.275	15.304	17.013
Skewness	1.468	0.184	-0.764	-0.230	-1.135
Kurtosis	8.130	2.122	3.149	2.484	5.455
Jarque-Bera	182.032	4.719	12.296	2.497	58.236
Probability	0.000	0.094	0.002	0.286	0.000
Sum	978.090	5840.000	9120.000	9860.000	9440.000
Sum Sq. Dev.	11792.97	91955.20	37004.80	29043.20	35891.20
Observations	125	125	125	125	125

The average or mean value of the Return on Assets (ROA) is 7.824. The company investment increases by 6.45 on average to the maximum of 49.39. The minimum value of ROA is -18.91 shows a decrease in ROA for companies listed in Colombo Stock Exchange. Other than that, minimum and maximum values are 49.39 and -18. 91 respectively. The value of the standard deviation is 9.752.

Community, Customer, Employee and Environment are independent variables. The average value of the CSR level of the Community is 40 from the range of 0 to 100. The median value of the CSR level of the Customer is 80 from the range of 0 to 100.

The CSR level of Employee is with an average value of 80 from the range of 0 to 100. From the range of 0 to 100, the CSR level of the average environment value is 80. The maximum and the minimum values are varied from 0 to 100 of the independent variables. The Mean value of all dependent (ROA) and independent variables (Community, Customer, Employee and Environment) is 7.82, 46.72, 72.96, 78.8 and 75.52 out of 100, respectively. The standard deviation values of ROA, community, customer, employee and environment are reported as 9.75, 27.23, 17.27, 15.30 and 17.01, respectively.

Correlation Analysis

Table 18: Correlation Matrix

Variable	ROA	Community	Customer	Employee	Environment
ROA	1.000				
Community	0.363	1.000			
	0.000				
Customer	0.411	0.314	1.000		
	0.000	0.000	-----		
Employee	0.244	0.289	0.812	1.000	
	0.006	0.001	0.000	-----	
Environment	0.173	0.538	0.177	0.191	1.000
	0.052	0.000	0.048	0.033	-----

According to Table 3, all independent variables positively correlate with ROA in the listed Manufacturing firms. All the correlation values of the table are in plus values. All these correlation values are positive as well as these values are more than zero and near zero. That means there is a weak and positive relationship between the dependent and independent variables. These p values are less than 0.05 (5%) and 0.1 (10%) significant levels. It indicates a positive and significant relationship between the independent and dependent variables of this study.

Regression Analysis

Table 4. Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.5064	5.0438	-0.8934	0.3734
Community	0.1017	0.0346	2.9369	0.0040
Customer	0.3165	0.0767	4.1219	0.0001
Employee	-0.1836	0.0860	-2.1348	0.0348
Environment	-0.0135	0.0535	-0.2530	0.8006
R-squared	0.2595	Mean dependent var		7.8247
Adjusted R-squared	0.2348	S.D. dependent var		9.7521
S.E. of regression	8.5304	Akaike info criterion		7.1643
Sum squared resid	8732.171	Schwarz criterion		7.2774
Log likelihood	-442.770	Hannan-Quinn criter.		7.2102
F-statistic	10.5156	Durbin-Watson stat		0.7880
Prob(F-statistic)	0.0000			

In this study, the model is estimated, and hypotheses are tested by regression analysis (multiple linear regression). The regression method is applied to investigate the causal relationship between corporate social responsibility and financial performance. Table 4 shows the regression results based on ordinary least squares (OLS) regression by using Pooled OLS method.

The findings highlighted that Corporate Social Responsibility (Community, customer, employee and environment) affected a company's financial performance (Return on asset). According to the results of this research study, the independent variables of community, customer and employee are significant $p < 0.05$. But the independent variable of the environment is insignificant, which $p > 0.05$. According to the previous scholar findings, the relationship between the CSR level of the environment and ROA was negative and insignificant (Tilakasiri, 2012).

However, in this study $F = 0.0000$ n <0.05. It shows that the overall combined effect of the model is good. So, the model is significant and efficient for taking decisions. In this model, alternative hypotheses (H1) can accept without any issues (the overall model is good). According to t-statistics, all three out of four independent variables are significant to the model. According to this model, there is a relationship between corporate social responsibility and financial performance. However, 25% of the dependent variable is explained by independent variables. After removing the autocorrelation from the model, the Durbin Watson Stat value is 1.87, which is greater than 1.5 acceptable level and within the standard range. Corporate social responsibility activities do necessarily have a profit-increasing performance-enhancing ability in manufacturing firms in Sri Lanka.

Hypotheses Testing

Table 19: Summary of Hypotheses Testing

Variable	Hypotheses	Relationship	Significant	Accepted/ Rejected
Community	H1	Positive	Significance	Accepted
Customer	H1	Positive	Significance	Accepted
Employee	H1	Negative	Significance	Accepted
Environment	H1	Negative	Insignificance	Rejected

5. CONCLUSION

According to the results obtained from regression analysis, there is a statistical relationship between corporate social responsibility and financial performance during the period considered in the study. In section 4, the research results were presented, analysed, and discussed descriptive statistics, correlation analysis and regression analysis. To assess whether the model is efficient, three assumption tests were followed. They are the Serial correlation test (Breusch-Godfrey Serial Correlation LM Test), Multicollinearity test and Heteroskedasticity Test. The findings highlighted that Corporate Social Responsibility (Community, customer, employee

and environment) affect the financial performance (Return on asset) of manufacturing companies in Sri Lanka.

According to the results, there is a relationship between corporate social responsibility (community, customer, employee and environment) and financial performance (return on asset) of manufacturing firms in Sri Lanka.

The most important topic in the present business environment, corporate social responsibility, refers specifically to relationships with stakeholders such as the community, customers, employees and environment. This study provides commentary to the company that these stakeholder activities benefit them. The result is useful for identifying the activities to improve the profitability level. They encourage in involving in corporate social responsibility activities. It is useful to whole parties of society. And this is useful for investors to identify the industry in which they should invest their money. That is useful to improve the market value of the business. That acts as a signal for investors to show that it is most profitable to invest their money in that company (Tilakasiri, 2012).

At present also, Sri Lankan corporate social responsibility data is a voluntary disclosure. Because of that, the companies disclose the financial information regarding corporate social responsibility in order to increase companies' willingness to report. On the other hand, financial data cannot exactly reveal the real state of corporate social responsibility towards its shareholders. This is the main limitation of the study.

The adoption of corporate social responsibility activities differs from industry to industry. This result can be varied for other sectors of the companies, such as the service sector. There is a space available for future researchers to research by comparing industry-wise information. It will be useful to its potential users. Not only that, anyone can conduct research on this topic by selecting a wider sample than this. This study is based on corporate social responsibility and firm financial performance. Financial performance is not the only concept linked with corporate social responsibility. There are so many concepts which are useful to identify the relationship with corporate social responsibility. It is useful for decision-makers to identify that relationship for their decision-making. It is a new opportunity to conduct another research to identify that kind of relationship.

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LESSONS LEARNED FROM COVID-19 PANDEMIC A CASE OF MANAGING FINANCE OF SMALL AND MEDIUM ENTITIES

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ABSTRACT

Today the entire world is facing a significant impact due to the COVID-19 pandemic which greatly influences a country's economic, social and cultural progress. To be exact, the influence of this pandemic has greatly hit the economic development of developing countries that are on the edge of reaching development. Sri Lanka, also a developing country is facing a huge blow due to COVID-19 on various business sectors in the economy. Whether the organizations are large-scale or not, the impact remains the same. Hence the researcher concentrates on evaluating and analyzing the lessons learned from the COVID-19 pandemic by the small and medium enterprises in Sri Lanka. Here the author tries to identify how various SMEs have faced the pandemic situation, how they have managed their finance within the organization, and the impact created on the financial performance of SMEs as a result of the COVID-19 pandemic. The main idea behind conducting this research was to provide the other SME owners as well as the relevant authorities with taking necessary actions to improve the financial management of an organization during a pandemic situation in the country. To achieve the research objectives, qualitative research was conducted where five small and medium enterprises were interviewed and questioned on their personal experience regarding COVID-19. Interviews were conducted mainly through telephone calls, and the analysis of the research was conducted by applying personal experience narrative analysis. The analysis was conducted under six major factors and elaborated to provide the reader with a better understanding of the situation. The story of five different SME owners was evaluated and a summarized overview was provided regarding the SMEs. By conducting a detailed analysis, it was identified that certain SMEs experienced a positive impact on the financial performance during the COVID-19 pandemic, while some SMEs had a quite negative impact on the financial management within the organization. However, it was also identified that some organizations have a moderate impact on financial management. Therefore, it can be concluded that the financial management of SMEs depends on the organization itself during the pandemic.

Keywords: COVID-19, SMEs, Financial Management, Financial Performance, Qualitative Research

1. INTRODUCTION

Coronavirus ailment (COVID-19) is an irresistible illness brought about by a newfound virus. A great many people tainted with the COVID-19 infection will encounter mellow to direct respiratory disease and recoup without requiring exceptional treatment. More established individuals and those with basic clinical issues like cardiovascular sickness, diabetes, ceaseless respiratory ailment, and malignancy are bound to create genuine disease. The most ideal approach to forestall and hinder transmission is being all around educated about the COVID-19 infection, the illness it causes, and how it spreads. (World Health Organization,2020) The European Union (EU) offers clearer definitions, characterizing a small-sized enterprise as a company with fewer than 50 employees and a medium-sized enterprise as one with less than 250 employees. In addition to small and mid-size companies, there are micro-companies, which employ up to 10 employees. Small and mid-size enterprises (SMEs) are often considered to be the heartbeat of both emerging and developed economies. They are responsible for providing many jobs and contributing to 45% of domestic employment and 52% of Sri Lanka's gross domestic product (GDP), the role SMEs play in the Sri Lankan economy should not be underestimated. (The European Union,2020) Financial Management means planning, organizing, directing, and controlling the financial activities such as procurement and utilization of funds of the enterprise. It means applying general management principles to the financial resources of the enterprise. According to the Managing Finance of Short and Medium size enterprise, there are three elements. Namely, Investment decisions include investment in fixed assets (called capital budgeting). According to the Cowles Foundation status that small business owners had already been severely impacted by COVID-19related disruptions and had laid off many employees. In addition to that, according to the National Bureau of Economic Research, (2020) results suggest that the pandemic has already caused massive dislocation among small businesses. While businesses' beliefs about the duration of the crisis vary widely, the median business owner expects the dislocation to last well into mid-summer (Cowles Foundation,2020)

2. LITERATURE REVIEW

Definitions of Small and Medium Enterprises (SMEs)

SMEs have been described from various perspectives by different countries, authors, and institutions around the globe. Therefore, when going through various research articles and journals, many definitions can be found regarding SMEs. There is no universally accepted definition of SME. This study uses the current World Bank Group definition of a small business. It includes businesses with up to 100 employees. SMEs are defined differently in different nations depending on their level of development. The total number of employees, annual turnover, and total investment are some of the most widely utilized metrics. The SME policy framework in Sri Lanka identifies SMEs based on the number of employees and yearly turnover (Ministry of industry and commerce, 2015). In the manufacturing sector, medium-

scale organizations are defined as those with more than 50 employees but less than 300 and an annual turnover of Rs.251-750 million. Micro and small-scale organizations, on the other hand, are defined as those with 1 to 50 employees and an annual turnover of less than Rs.250 million (National Policy Framework, 2011). Several other countries across the world have their definitions of what constitutes a small business. For example, in Malaysia, SMEs are defined as enterprises with less than 200 full-time employees in the manufacturing sector and a sales turnover of less than RM 20 million or enterprises in the service and other sectors that employ fewer than 75 persons (Whah and Shiang, 2018). SMEs are defined as firms with a paid-up capital of less than Rs 25 million that employ up to 250 people, according to Pakistan's SME policy from 2007 (Khandker, 2014). In India, SMEs are defined as organizations with an investment in plant and machinery of less than Rs.10 crores, whereas medium companies have an investment in plant and machinery of less than Rs.50 crores, according to the Micro, Small and Medium Enterprise Act of 2006 (Ministry of micro, small and medium enterprises, 2020).

Financial Management of SMEs

According to Irena Jindrichovska (2013), in order to focus more attention on the important aspects of SMEs' financial management, he has developed three major concepts accordingly: Financial management has three main components; (1) the issue of cash flow management and liquidity management. The most valuable nonhuman asset of a firm is cash. (2) The issue of long-term asset acquisition guides the company's long-term strategy. 3) Financial considerations, capital structure and funding costs are the most pressing issue of liquidity management. If a company cannot plan a suitable policy to efficiently manage its working capital, it will never be successful in the long run. In general, bad financial management by owner-managers is the primary source of issues for SMEs. SMEs play an important socioeconomic role in developing and emerging economies. However, both emerging and developed countries have recently become increasingly worried about the degree of financial literacy of entrepreneurs. This is due to a combination of deteriorating governmental and private support networks and broad changes in the financial marketplace. Lacking the necessary knowledge or knowledge regarding financial decision-making, and these decisions may have far-reaching and unintended implications. As a result, financial literacy is now widely regarded as a critical component of economic and financial stability, as well as the growth and development of SMEs. Many promising small businesses have failed due to poor cash flow management (Raveendran, 2017).

Covid-19 on financial management of SMEs

In addition to that, according to the Sunday Ogbeide (2021), from cradle to tomb, finance is essential to human existence. It is necessary for the establishment, management, performance, growth and survival of a firm. It occupies a central position in business, government and human affairs. Any government's ability to

address the basic needs of its citizens depends heavily on its financial resources, which include, among other things, the provision of hospitals, schools, and roads, as well as societal development. It is an important aspect of everyone's life, whether workers, investors, entrepreneurs, homemakers, husbands, newlywed couples, job seekers, beggars on the street, or politicians such as governors, senators, presidents, and local government chairmen. Finance is crucial to an individual's or a nation's survival and the greater economy. Finance encompasses all commercial entities as well as human existence on the planet. In addition to that, the SARS-CoV-2 coronavirus, which causes COVID-19 disease, caused the most significant change in the world order in the last century, destabilizing the global economy and financial stock markets, as well as the global economy, social development, business, risk, financial management, and financial markets. COVID-19 has wreaked havoc on tourism, travel, hospitality, supply chains, consumption, production, operations, valuations, security, financial stress, and the costs of all goods, including fossil fuel and renewable energy sources. This Editorial introduces the "Risk and Financial Management of COVID-19 in Business, Economics, and Finance" special issue of the Journal of Risk and Financial Management (JRFM). This special issue will feature cutting-edge, practical applications of mathematics. On the topic, probability and statistical techniques are discussed, as well as empirical applications. This article looks into significant topics such as tourism, global health security, risk management in business, and the social and medical sciences (Chang et al., 2020). In addition to that, according to Wilfred Mukora (2020), the coronavirus's rapid geographic spread, and hence the high infection rates of over 4 million illnesses in over 110 countries by May, generated alarm around the world and interrupted worldwide economic activity. Travellers cancelled flights, businesses requested employees to stay at home, and stock prices plummeted, bringing most businesses to a halt. According to Achim et al. (2021), the COVID-19 pandemic has wreaked havoc on people's lives worldwide. The financial crisis has been felt most severely in business and commerce. This study intends to evaluate the level of business performance in reaction to the COVID-19 pandemic by analyzing numerous major changes in entities' activities. According to Randa and Atiku (2021), the general reduction in labour supply, supply chain disruptions, and unexpected loss of demand and revenue caused by the COVID-19 epidemic has had a detrimental impact on SMEs, forcing them to be unable to operate properly, resulting in cash issues. Financial systems that decrease information asymmetry, transaction costs, external financial restraints, market frictions, and structural obstacles that limit entrepreneurs and economic agents are likely to be important.

3. METHODOLOGY

The author has chosen to conduct the study using the qualitative method. According to a study of SMEs in Pakistan, a distinguishing feature of qualitative research from quantitative research is that it implies that there are multiple realities in the universe

for a single phenomenon, which each person distinguishes, clarifies, and acknowledges differently depending on his or her knowledge and expertise (Ahmad et al., 2021). In addition, the author might choose the research strategy after deciding on the research approach. As per Saunders, Lewis, and Thornhill, 2016 as cited by Kakar (2020), the term "research strategy" refers to "having a plan." The author's research strategy will determine whether the research study is quantitative or qualitative. According to Yin (2009), as quoted by Hashemiolya and Nourabi (2015), the data analysis technique in this study is Narrative Analysis. Within the qualitative research community, story analysis research is a popular tool for better understanding a person's or a group's experiences. Narratives have been used sparingly in Extension.

Extension practitioners have traditionally utilized narratives to communicate the value of Extension programs or, more recently, as part of a larger program evaluation effort (Cowger, 2021). In addition, the author has described the research questions as follows, *what is the importance of the financial performance of small and medium enterprises during the covid 19 pandemic in the Sri-Lanka?* According to the author, when ensuring social distancing and every other health and safety conditions, SMEs have to help and increase people's health because people can move to the nearest shop and buy goods and services which they want when SMEs perform well in the entire economy. *What are the lessons/percepts learned by Covid-19 for conducting the daily financial activities of small and medium enterprises?* Most of the time, they have to move to obtaining bank loans and borrowing from other parties who are willing to provide some funds to the entity. In addition, most of the time, entities have moved to keep fixed deposits to ensure safety and survival when another pandemic or disease directly affects the entities' management and control, like the Covid-19 pandemic. *What are the impacts of each lesson learned through Covid-19 on the financial management of small and medium enterprises?* When continuing the payments related to the employee expenses, entities have used their own fund to keep the employee's trust in the entity. In addition to that already have to keep the possible and required number of stocks in the warehouses of manufacturing firms by using the collected funds

4. FINDINGS AND DISCUSSION

The sample was obtained from random sampling, and the researcher added the personal experienced narrative analysis method. And addition to that, according to Labov and Waletzky (1997), an analytical framework for analyzing oral versions of personal experiences in English is presented. The material is based on tape-recorded narratives from two different social contexts. A face-to-face interview is one in which the narrator only speaks to the interviewer. Therefore, according to the author, this analysis is conducted using the Transcript made from already-taken oral interview records.

Table 1: A Summarized Overview of Analysis

Factors	SME 01	SME 02	SME 03	SME 04	SME 05
Abstract	Negative impact as a result of Covid-19	Positive and negative impact as a result of Covid-19	More towards the negative impact rather than the positive impact as a result of Covid-19	Negative impact as a result of Covid-19	Negative impact as a result of Covid-19
Orientation	Mostly affected by the inflationary situation during the pandemic period, which was one and a half years.	Mostly affect the inflationary situation and fluctuating trend of sales revenue in the case of a lockdown period	Mostly affect the uncertainty of the future of the business and the lack of growth of the business during the pandemic period	Mostly affected by the decreasing situation of sales during the pandemic period and which lasted for one-and-a-half year	Most of the time face a lack of generating revenues during the one and half years in the case of the Covid-19 Pandemic
Complicating action	There was a considerable impact on liquidity management during the pandemic. In addition, there were difficulties related to working capital management and inventory management.	There was a border impact on inventory management in the case of the main business was selling fast-moving items, and there was a difficult situation when paying for the creditors of the Business, especially recognising the many expenses which are not recognized previously	There was a situation related to the expense covering and generating cash inflows rather than the outflow	There were some difficulties when managing finance related to working capital management and especially faced the reduction of revenues in case of government limitations.	There was a struggle when managing their inventories and day-to-day expenses.in addition, some problems related to debt collection and creditor payment.

Resolution	Used the pre-collected money for the purpose of finance, used different alternative raw materials.	Exercised bank overdraft and Covid loans from financial institutions, online sales	Obtained loans from other parties; for example, a friend started the Online sales	Used the cheque payments and purchased sufficient food and beverages for one or two weeks.	Extend the credit period, reduce the credit period and deliver pressure to the customer, obtain the bank loan
Evaluation	There was a decreasing situation of profit, and drop-down situation of trust of the existing customer, and raised the raw material prices	Must have a keep fill in the stocks due to the travelling restrictions, there were big challenges the management of the health safety	There was a big struggle with the management of daily financial expenses	There should be the freedom from restrictions of travelling to generate income and should consider every people who come to the hotel to ensure the safety	There was a decrease in the desired profit and revenue, have to face difficulties when doing some construction on the premises. Chess the own selling vehicle as an alternative finance method
Conclusion	It's better to have an obtained bank loan, and have pre-created fixed deposits, and flexible quotation protectable from quotation which the customer agreed	Better to have a fixed deposit	Better to manage and evaluate the day-to-day financial status of the company	Better to have a proper inventory control system and estimation which specified to the pandemic	Better to have some pre-collected money

5. CONCLUSION

According to the study, researchers have found data from SMEs related to different industries. In addition, in a developing country, the stability of the small and medium entity's financial side is a major component of the economy. Therefore according to the study, there are so many effects on small and medium entities during this pandemic. In addition, there is a trouble that arises in the case of the shortage of financial management literacy of each and all business owners and managers. Therefore author recommends continuing the programs which enhance financial management literacy. In addition to that, when going through the study, findings can be used to understand SMEs' cash management, liquidity management, and inventory management. There are a few drawbacks to this study. Since the research study was conducted during the Covid-19 breakdown, the authors data collection process was very limited. Meanwhile, due to the prevailing scenario in the country, it was difficult to gain contact with the individual who, in pandemic conditions, interviews are performed on online platforms

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APPLICATION OF GEOMETRIC BROWNIAN MOTION MODEL FOR SIMULATING CRUDE OIL FUTURES IN THE INDIAN CONTEXT

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ABSTRACT

The derivatives market is a human-made system that changes with time. Therefore, researchers may never find a model that perfectly describes the derivatives market. The big challenge is that there is only one actual crude oil futures price path during a period. Because of that, the crude oil futures price path can be seen as a non-repeatable experiment, as it is impossible to replicate all the initial conditions. Crude oil futures prices prediction and the hedge are exciting topics for everyone who wishes to invest in derivatives. That's why there are various models built for security price prediction, and the hedge, here test model known as the Geometric Brownian Motion (GBM). The purpose of this research study is to determine whether the Geometric Brownian Motion (GBM) model can be used in the Indian Multi Commodity Exchange (MCX). In this research study, the validity of the GBM model was tested using daily crude oil futures prices per barrel in the MCX from February 9, 2005, to December 31, 2020. Researchers used the Mean Absolute Percentage Error (MAPE) to determine the accuracy of this model's application. With MAPE values ranging from 0% to 11%, the GBM model accurately forecasts crude oil futures prices on the MCX in India. The GBM model was created to predict security price behaviour and then used to trade securities. After that, the simulated or forecasted prices were compared to actual crude oil futures prices. The results revealed that in far more than 80% of cases, the model correctly forecasts crude oil futures price behaviour. There is also a way to examine the security's probabilistic distribution mathematically. This research study aims to assist investors and other stakeholders in making judgments concerning crude oil futures trading, notably on the MCX's derivatives market. Furthermore, future researchers will be able to improve these models by focusing on additional derivatives markets with different underlying assets due to this research.

Keywords: Crude Oil Futures, Geometric Brownian Motion Model (GBM), India, Simulation

Jel Classification: C22, E6

1. INTRODUCTION

Crude oil prices are fluctuating wildly these days. However, Asia's (India and China) oil demand continues to be the largest. In 2020, the coronavirus negatively impacted the economy, ending in a deep recession. This, however, resulted in a fast economic and price recovery. A drop in crude oil prices should reduce the cost of transportation

and fuel for businesses. Customers like the lower transportation and fuel prices. When oil prices fall, customers can successfully increase their profits by switching their fees to a lot for alternative products. Crude oil is the most traded commodity and has a considerable impact on international transportation costs; therefore, it is projected to generate inflation and stimulate economic growth.

On the other hand, Crude oil prices frequently drop due to investor concerns about an expected economic recession. In March-April 2020, oil prices dropped to their lowest levels in several years, potentially arise to a drop in crude prices. Meanwhile, in April 2020, WTI crude prices fell to unfavourable levels for a brief while. Due to the value loss in March-April 2020, its value has dropped to its lowest in several years.

Consequently, each economy must simulate crude oil pricing on a worldwide scale. As a result, the purpose of this research is to look at how GBM may be used to describe the stochastic evolution of crude prices concerning oil price changes affecting Indian derivatives. Because there is no futures market in Sri Lanka, India is the world's third-largest crude oil importer with a derivatives market.

The National Commodity and Derivatives Exchange (NCDEX) and the MCX are India's two major commodity exchanges. In non-agricultural commodities like bullion, crude oil, and industrial metals, the MCX is the market leader; in agricultural commodity trading, the NCDEX is the market leader. The competition will increase because the NSE and the BSE have already turned their attention to commodities trading. However, because NSE and BSE have only lately entered the commodity trading market, NCDEX and MCX remain the market leaders. The focus of this research was on crude oil that had nothing to do with agriculture. As a result, our research is based on MCX crude oil futures (BRCRUDEOIL, CRUDEOIL, CRUDEOILM).

In Mumbai, MCX was founded in 2003. MCX is India's most well-known and first publicly traded commodity derivatives exchange, providing a platform for price discovery and risk management by facilitating the online trading of commodity derivatives contracts. The Forward Markets Commission (FMC) once regulated the MCX; on September 28, 2015, the FMC was merged with the SEBI. Nonferrous metals, energy (crude oil), bullion, and a few agricultural commodities such as mentha oil, crude palm oil, cotton, cardamom, and other agri-commodities are all available for trade on the MCX. The price of crude oil futures was the subject of this study.

Futures are derivatives because they are contracts that are traded in the future. Derivatives are complex tools with a wide range of uses. A derivative is a contract between two or more parties in which the price is determined by the underlying asset, which is a financial asset, index, or security. Futures contracts, forward contracts, options, swaps, and warrants are commonly traded derivatives.

The derivative's value changes in lockstep with the underlying asset's price. Derivatives have no relevance without an underlying asset. The underlying asset, crude oil, determines the value of a crude oil futures contract, for example. In this case, the derivatives market prices were generated from the spot or cash market price

of crude oil, the underlying asset. The primary purpose of these instruments is to give price commitments for future dates to safeguard against adverse changes in future costs and reduce the magnitude of financial risks. A futures contract is an agreement to buy or sell a specific commodity, asset, or security at a predetermined price on a specified date in the future. Futures contracts are standardized in terms of quality and quantity to be traded on an exchange. When futures contracts expire, the purchasers are responsible for purchasing and receiving the underlying asset. Futures contract sellers are obligated to produce and deliver the underlying quality by expiration.

2. LITERATURE REVIEW

In recent years, significant price fluctuations in crude oil have pressured both exporters and importers. As a result, each country must reliably forecast crude oil prices against them. Even though many quantitative studies have been conducted on crude oil prices, forecasting crude oil price movements is challenging due to the difficulty in constructing a forecasting model. Traditional linear forecasting methodologies may also fail to account for nonlinearity in the crude oil price time series, resulting in inconclusive evidence. Policymakers and academics have used the Vector Auto-Regressive (VAR) models, GARCH, and its derivatives to estimate crude oil prices accurately in short to medium term because they are easier to predict future crude oil prices than another forecasting model, the Geometric Brownian Model the most widely used model in the literature.

Simulating the security price requires creating a price path that the security could take in the future. Because future crude oil prices are stochastic, researchers used Monte Carlo Simulation to simulate them. In financial services, strategic planning, cost, and other modelling techniques, Monte Carlo Simulation is one of the approaches used to analyze the impact of risk and uncertainty. It aids in the visualization of the majority, if not all, of the possible outcomes so that the risk associated with a decision can be better understood. (Sengupta, 2014). Crude oil is a crude petroleum product composed of hydrocarbon deposits and other naturally occurring organic components.

A GBM is a continuous-time stochastic technique in which a Brownian motion with drift is escorted by the logarithm of the randomly varying extent. Brennan and Schwartz (1985) depicted the trajectory of oil prices as a GBM. Bachelier's famous work from a century ago was followed by Black and Scholes' interpretation a few decades later, and this model has since been widely applied in various sectors. Concurrently, the GBM model for stock prices has been widely applied to model the evolution of stock price levels and returns in emerging and developed markets.

According to Fama (1995), GBM is a popular hypothesis in corporate finance for explaining time series variables and asset price behaviour. Brownian motion was discovered by biologist Robert Brown while watching pollen particles floating in water under a microscope in the eighteenth century. Brown thought the pollen particles were 'alive' because they moved swiftly. According to Albert Einstein, water molecules move randomly under the right conditions, who discovered this in 1905. Brownian motion is a widely held belief in the financial markets, where asset prices

routinely fluctuate by significant amounts. This strategy has resulted in a slew of models based on opposing viewpoints.

Technical analysis theory and quantitative analysis are two extensively utilized methods for estimating the value of securities. According to technical thinkers, history repeats itself, and historical pricing trends will repeat in the future. Fundamental analysis assumes that each commodity has an intrinsic value based on its potential earnings at any given time, indicating whether a security is overvalued or underpriced. Many others believe that security prices follow a random path. The random walk theory states that security will take an unusual and unexpected course that will outperform the market while offering no additional risk. This theory casts serious doubt on other ways to characterize and forecast security price behaviour. Because of its unpredictability and the assumption that asset prices are fixed over time, the GBM model, which employs random walks to determine security costs, is based on the concept of insecurity pricing.

According to substantial assessment errors, a GBM proxy will not produce. Furthermore, both the level and slope of the oil price are stochastic. Pindyck (1999) makes the less realistic assumption of an isoelectric demand function, which permits the integral to converge.

The GBM model, according to Sengupta (2004), suggested the following features for security prices:

- The companies are a going concern, and their security prices are continuous in time and value.
- Securities follow a Markov process, meaning only the current security price is relevant for predicting future prices.
- The proportional return of securities is log-normally distributed.
- The continuously compounded return for securities is normally distributed.

According to Sengupta (2004), The longer an investor wants to keep an asset, the more they get concerned about the security's eventual price, i.e., the greater the likelihood that the actual final price will differ significantly from the predicted final price. The longer an investor plans to hold a stock, the more confident they are in achieving the predicted rate of return. Although they appear different, Sengupta has shown why they aren't and the GBM assumption.

According to Sengupta, the critical assumption about security prices is that they are continuous in time and value, suggesting that security prices can be observed at all times and vary continuously. However, this isn't entirely accurate. Markets are closed on nights and weekends, and securities prices can only fluctuate in whole cent increments. Nonetheless, this reasonable assumption makes calculating security prices much more accessible.

The second assumption is that security prices follow a Markov process, practically identical to the poor version of the efficient market hypothesis, which asserts that future prices cannot be anticipated based on previous prices.

Marathe and Ryan established the Brownian motion theory in 2005, and it allows them to infer that the structure for detecting whether a particular dataset follows a GBM process or not can be used to several data types. Because of regularity and independence requirements, the GBM algorithm may be suitable for particular data sets. However, the GBM process distribution hypothesis may not be appropriate for some data sets. As a result, exercising caution while concluding that a data set follows any particular model's GBM process is advised. According to the researchers, the number of data points utilized to examine cellular phone data and Internet host data could affect the study's results. As a result, additional data points for the example type indicated must be collected.

Data linked to service consumption from diverse industries may or may not satisfy the GBM technique's criteria, according to Marathe and Ryan (2005). Services that fail one or more of Marathe and Ryan (2005)'s tests are in newer industries that may still be classified as emergent. Data on how people use the services indicated in the report is also harder to come by. The early and well-established electric generation and aeroplane transportation services suit the GBM assumption better after deseasonalization. After determining that the model is good enough for deseasonalized data, a forecast of future demand may be obtained from the GBM model with the fitted parameters by re-inserting the seasonal components. How seasonal pattern decision-making influences the application; capacity decisions, for example, are frequently based on peak demand during the season. Generalization into the future does not ensure accuracy when a model appears to match previous data closely.

According to Brewer et al. (2012), the uncertain component of the GBM model is described as a function of the stock's volatility and a stochastic notion described as the Weiner process, which combines random fluctuations and a time interval. Brewer et al. (2012). Kumar et al. (2015) analyzed the path followed by modelled prices and closing prices to see how well the GBM behaved on the price of SBI stocks.

The feasibility of representing the stochastic movement of oil prices using GBM was examined by Nwafor and Oyedele (2017). According to academics, choosing a stochastic strategy for forecasting oil prices is essential. The results show that the GBM approach outperforms the conventional strategy in nearly every forecast evaluation statistic. The Monte Carlo simulation with the GBM model can simulate oil price behaviour in oil-rich emerging countries using simple technology tools. The researchers showed that the Monte Carlo simulation, representing oil prices as a GBM, is a fair proxy for oil price evolution.

3. METHODOLOGY

The validity of the GBM Model in the Indian derivatives market was investigated in this study, which used readily available secondary data (daily crude oil futures' prices) acquired from the MCX to simulate daily crude.

The population in this study analyzed daily crude oil futures prices in the Indian derivatives market from 2005 to 2020 (16 years) (BSE, NSE, NCDEX, MCX). The

BSE offers two types of crude oil futures: OMCRUDE and BRCRUDE. On the other hand, those crude oil futures have been traded since 2020. Since 2019, only BRENT CRUDE OIL futures have been traded on the NSE. Only agricultural commodities are listed on NCDEX. As a result, NCDEX makes no addition to the population. There are four different forms of crude oil futures on the MCX: BRCRUDEOIL, CRUDEOILM, MESCRUDEOIL, and CRUDEOIL. From 2005 to 2016, BRCRUDEOIL futures were traded, followed by CRUDEOILM futures from 2015 to 2019, MESCRUDEOIL futures from 2015 to 2019, and CRUDEOIL futures from 2005.

The sample size for the GBM Model in this research study includes daily crude oil futures prices in the MCX from 2005 to 2020. (16 years). Secondary data from the MCX was used in this study, and data presentation tools included Microsoft Excel and descriptive statistics. The research design GBM Model is a model for determining risk value in which the random variable quantity's logarithm follows a Brownian Motion with drift. It's known as the Wiener Process. By solving the stochastic differential equation below (1), the stochastic process S_t follows GBM.

$$dS_t = \mu S_t\, dt + \sigma S_t dW_t \qquad (1)$$

Where μ is the percentage drift, σ is the percentage volatility, and the Wiener Process abbreviated as W_t is a mathematical method for calculating the (GBM). Both are constants in this situation. On the other hand, this research project uses Excel to simulate future crude oil futures prices. As a result, for the discrete-time example, the preceding equation should be modified as follows:

$$\Delta S_t = S_{t-1}(\mu \Delta t + \sigma \varepsilon \sqrt{\Delta t}) \quad (2)$$

In the above equation (2), ΔS_t represents the crude oil futures price change per unit of time, Δt represents the time interval (one day), and ε represents the standard average random number. The previous day's crude oil futures price allowed the parenthesis words to drift and shock. When studying equation (2), it's important to remember that the GBM is a Markov process because tomorrow's price is determined only by today's price, not the past.

Because the price ratios are lognormal, GBM can be considered a lognormal diffusion process. That means the crude oil futures will have a lognormal, continuously compounded periodic return ($ln\ (S_t/\ S_{t-1})$). This lognormal random approximately usually distributes a variance $\sigma^2 t$ and mean $(\mu - (\sigma^2/\ 2))t$. To present that in this research study following equation has been formulated. Where α indicates the deterministic component (drift), $z_t \sigma$ indicates the stochastic component where z_t generate random variables for the crude oil futures price, which its corresponding stochastic volatility at *t* will scale.

$$\ln\left(\frac{S_t}{S_{t-1}}\right) = \alpha_t + z_t + \sigma_t \quad (3)$$

The initial value of the crude oil futures price should be considered as S_0 and volatility as σ_1 before starting the simulation.

The random shock (stochastic component) in this research study is a function of random crude oil futures price and random volatility, allowing the stochastic process to take various pathways every time. The data presentation tool in the GBM model in Excel and the following inputs and procedures should be increased.

Expected Daily Drift

In one cell, the estimated return of the security should be stated. The daily drift is then determined by dividing the annual drift by 252. Finally, subtract 1/2 of the variation at period *t* from this daily drift to get an "expected" daily drift.

Expected Daily volatility

Set the value of the security's annual volatility in one cell, then divide the annual volatility by the square root of 252 trading days to get the value of the security's initial daily volatility. Use a custom Excel function called NORMSINV (RAND () to produce the regular normal random number. The probability between 0 and 1 is obtained using RAND, and the inverse standard normal cumulative distribution is obtained using NORMSINV.

Generated random variable for the security price

To create random variables, utilize the NORMSINV (RAND ()) excel function once more. It should normally get a value between -3 and 3 here.

Gathering Daily closing prices per barrel of the crude oil futures in MCX

Use the MCX website or Publicity available data about the daily closing price for the period and copy it to the excel worksheet.

Periodic Daily Returns

The following excel formula should be applied to calculate daily return.

=LN (Today's Closing Price/Yesterday closing prices) (4)

Then, using the periodic daily return mean in Excel, locate and calculate variance and standard deviation. In Excel, use the "AVERAGE" function to compute Mean (Range of periodic daily returns), "VAR.P" for calculating variance (Range of periodic daily returns), and "STDEV.P" for calculating Standard Deviation (Range of periodic daily returns) (Range of periodic daily return).

Application of GBM Model formula

$$\Delta S_t = S_{t-1}(\mu \Delta t + \sigma \varepsilon \sqrt{\Delta t}) \quad (5)$$

To present the GBM application, consider the equation above. There are two parts to this. One is certain, while the other is uncertain. Those two components should be calculated as follows.

1. Certain Variable (Drift Variable) = Average-(variance/2)
2. Uncertain variable = Previous day security's price* EXP (Drift+ S.D* NORMSINV (RAND ()))

The following equation (6) is the combination of the above two variables.

Change Security Price = Average-(variance/2) + Previous day security's price* EXP (Drift +S.D* NORMSINV (RAND ())) (6)

The chi-square test, which examines the "goodness-of-fit" between observed and projected security price values, can be used to test the hypothesis under GBM. This test detects a significant difference between expected (forecast) and actual security prices. Consider the equation below (7).

$$X = \frac{(Observed - Expected)}{Expected} \quad (7)$$

The probability that the observed value changes from the expected value purely due to chance should be compared to 0.05. When the probability value falls below 0, the null hypothesis is rejected.

In GBM, data analysis is done with the Microsoft Excel data analysis suite. The Mean Absolute Percentage Error determines the model's forecast accuracy.

$$MAPE = \frac{1}{n}\sum_{t=1}^{n}\left|\frac{A-F}{A}\right| \quad (8)$$

F and A = The forecasted values and actual values.

n = the number of observations.

The MAPE Judgment of forecast accuracy indicates the value <11% - Highly accurate, 11% to 20% - Good accurate, 21% to 50% - Reasonable forecast, and >50% - Inaccurate forecast.

4. FINDINGS AND DISCUSSIONS

It analyzes crude oil futures prices and simulates them in MCX using the GBM model by applying 16 years of daily crude oil futures prices across India's four derivatives marketplaces (BSE, NSE, MCX, NCDEX). From February 9, 2005, until December 31, 2020, secondary data was collected from the MCX website. The annual volatility was calculated using an excel formula utilizing 2005 and 2020. The application of the GBM model yielded the following result. The average, variance, standard deviation, and drift are shown in Table 1, which are statistical test values of daily crude oil futures prices at the MCX from February 9, 2005, to December 31, 2020.

Table 1: Statistical test value

Average	Variance	Stand Deviation	Drift
0.0001	0.0098	0.0990	-0.0047

The findings of the February 2020 simulation are shown in Table 2.

Table 2: Sample of actual prices and simulated prices in MCX

Day	Actual Crude Oil Futures Price	Daily Return	Simulated Crude Oil Futures Price
1-Feb-20	3678	-0.0156	3118
3-Feb-20	3665	-0.0033	3864
4-Feb-20	3622	-0.0119	4043
5-Feb-20	3637	0.0041	4424
6-Feb-20	3648	0.0031	3570
7-Feb-20	3630	-0.0050	3445
10-Feb-20	3574	-0.0155	3795
11-Feb-20	3590	0.0043	3256
12-Feb-20	3650	0.0165	3965
13-Feb-20	3658	0.0023	3512
14-Feb-20	3711	0.0143	3544
17-Feb-20	3723	0.0031	4054
18-Feb-20	3676	-0.0127	3666
19-Feb-20	3783	0.0287	3306
20-Feb-20	3887	0.0272	4146
21-Feb-20	3830	-0.0147	3426
24-Feb-20	3707	-0.0327	4565
25-Feb-20	3692	-0.0042	3508
26-Feb-20	3572	-0.0328	3173
27-Feb-20	3398	-0.0500	3940
28-Feb-20	3287	-0.0330	3526

Figure 1 depicts the changes in MCX crude oil futures prices from 2005 to 2020. (16 years). The horizontal axis in this graph depicts current crude oil futures prices per barrel in Indian Rupees, while the vertical axis depicts days. It means that daily crude oil futures prices varied between 2005 and 2020.

On August 17, 2005, the MCX recorded the lowest actual crude oil futures price. The price was Rs 823. In April 2020, the second and third lowest prices were recorded. They were Rs 955 and 957, respectively. This is a situation that has occurred in the recent past. The decline in WTI crude oil prices was documented as a historical note. In August and September 2013, the MCX recorded its three highest actual crude oil futures prices. They were Rs 7571, 7402, and 7365, respectively.

Actual crude oil futures prices in the MCX rose at the start of 2005. It is clear, however, that there are variations over time. Between 2009 and the middle of 2013, there was a significant increase in prices, as shown in this graph. Between the middle of 2013 and 2016, the MCX's actual crude oil futures prices dropped significantly. It was at a low point in 2009, 2016, and 2020. Actual crude oil futures prices on the MCX have dropped dramatically between 2009 and 2020. Actual crude oil futures prices increased moderately between 2016 and the middle of 2018. From 2009 to 2011, 2012 to 2013, and 2019 to 2020, the MCX attempted to keep actual crude oil futures prices stable. However, that commitment didn't exactly work out.

Figure 1: Actual crude oil futures price for MCX from 2005 to 20

The GBM model was used to determine simulated crude oil futures price movements in the MCX from 2005 to 2020 (16 years). The horizontal axis in this diagram depicts simulated crude oil futures prices per barrel in Indian Rupees, while the vertical axis depicts days. It means daily crude oil futures prices modelled from 2005 to 2020 fluctuated.

On August 18, 2005, the MCX recorded the lowest simulated crude oil futures price. The price was Rs 823. In April 2020, the second and third lowest prices were recorded. They were Rs 917 and Rs 1124, respectively. The GBM model also identified a decline in WTI crude oil prices. In August and September 2013, the MCX recorded three of its highest simulated crude oil futures prices. Rs 5306, Rs 7870, and Rs 7266 were the amounts.

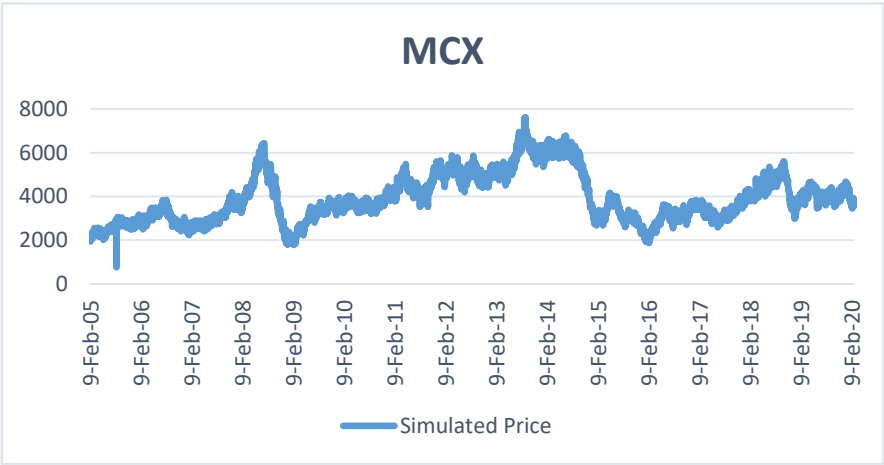

Figure 2: Simulated crude oil futures price for MCX from 2005 to 2020

Simulated crude oil futures prices in the MCX rose at the start of 2005. However, just like real-world prices, there are variations throughout time. Between 2009 and the middle of 2013, this graph shows a significant increase in simulated pricing. From the middle of 2013 to the middle of 2016, MCX's simulated oil futures prices have

dropped significantly. In 2009, 2016, and 2020, it reached a breaking point. The simulated crude oil futures prices on the MCX significantly dropped in 2009, 2014, and 2020. From 2016 through the middle of 2018, simulated crude oil futures prices have increased moderately. In the middle of 2009 to 2011, 2012 to the middle of 2013, and 2019 to 2020, the MCX aimed to keep simulated crude oil futures prices stable. However, the commitment usually doesn't work out like actual crude oil futures prices.

Figure 3 shows the actual and simulated changes in MCX crude oil futures prices from 2005 to 2020 on the same graph (16 years). It means that daily crude oil futures prices changed between 2005 and 2020. Both systems go opposite to one another. It shows simulated crude oil futures prices following the actual crude oil futures prices line and does not indicate further changes with actual crude oil futures prices over long time horizons, using the highly accurate GBM model in the MCX. That's why the blue line appears to obscure the red line entirely. If fewer years are utilized to construct simulated crude oil futures prices, the results will differ from figure 2.

The correctness of the GBM model can be determined by looking at Figure 3. The most important aspect is that it has been utilized for an extended time to collect daily data. Using a long period of data, such as this simulated crude oil futures price, will provide reliable forecasts.

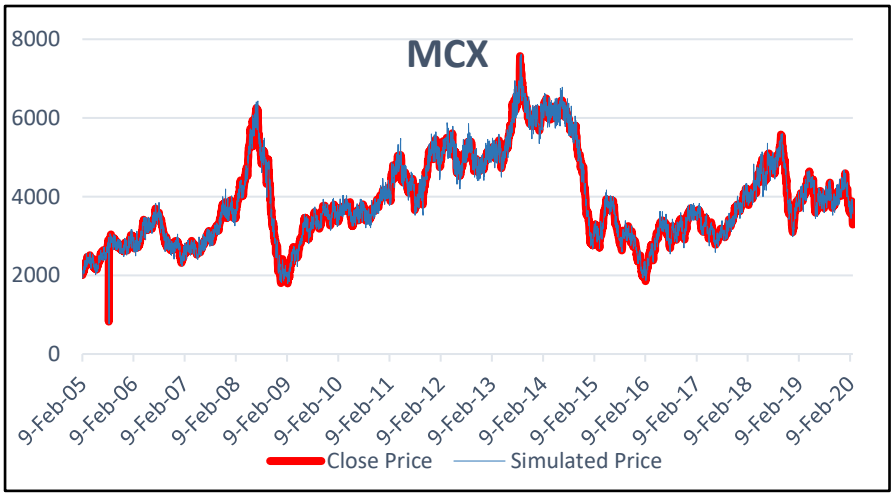

Figure 3: Comparison of actual crude oil futures prices vs crude oil futures prices

The crude oil futures prices obtained from India's Mumbai Commodity Exchange (MCX) were studied using Microsoft Excel data analysis software with constant parameters as in the GBM model. Additionally, 95 per cent confidence interval crude oil futures prices were generated and compared to actual crude oil futures prices. The model's forecast accuracy is calculated using the Mean Absolute Percentage Error. This metric depicts the difference between projected and actual crude oil futures prices, as seen in table 3.

Table 3: MAPE Table

Derivatives Market	MAPE
Multi Commodity Exchange	0.1016535

The GBM model accurately predicts crude oil futures prices on the MCX in India since the MAPE values are between 0% and 11%. The chosen MCX (10.16535%) indicates that the results will be highly accurate.

5. CONCLUSION

The GBM model is a frequently used price prediction model in several countries when it comes to modelling security prices. In the Indian derivatives market, however, there are no widely observables for crude oil futures. As a result, the primary goal of this study is to determine whether or not the GBM model is accurate.

To achieve this goal, the researchers used daily crude oil futures prices from the MCX from February 9, 2005, to December 31, 2020, to test the GBM model's validity. Researchers used Mean Absolute Percentage Error to determine the accuracy of those models' applications (MAPE). With MAPE values ranging from 0% to 11%, the GBM model accurately forecasts crude oil futures prices on the MCX in India. The GBM model was created to predict security price behaviour and then used to trade securities. After that, the simulated or forecasted prices were compared to actual crude oil futures prices. The results revealed that in far more than 80% of cases, the model correctly forecasts crude oil futures price behaviour. There is also a way to examine the security's probabilistic distribution mathematically. This research study aims to assist investors and other stakeholders make informed decisions on crude oil futures trading, notably on the MCX's derivatives market. Future researchers will be able to improve these models by focusing on various derivatives markets with other underlying assets due to this research.

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